Spoštovani,

Prišli smo do 2. številke 31. letnika revije Logika in razvedrilna matematika. Zdaj vas vabimo, da pripravite poliedrsko novoletno jelko. Nagradili bomo 5 po našem mnenju najlepših jelk. Pogoji so naslednji. Slika novoletne jelke mora biti objavljena na spletni strani šole do 15. 1 .2022. Na naslov info@logika.si morate poslati povezavo na sliko z vaše internetne strani in priimek in ime mentorja, ki ga bomo pripisali k naslovu šole, da ne bi šole morebitne nagrade poslale nazaj s pripisom »tega nismo naročili.« Slike morajo biti dostopne do 1.2.2021.

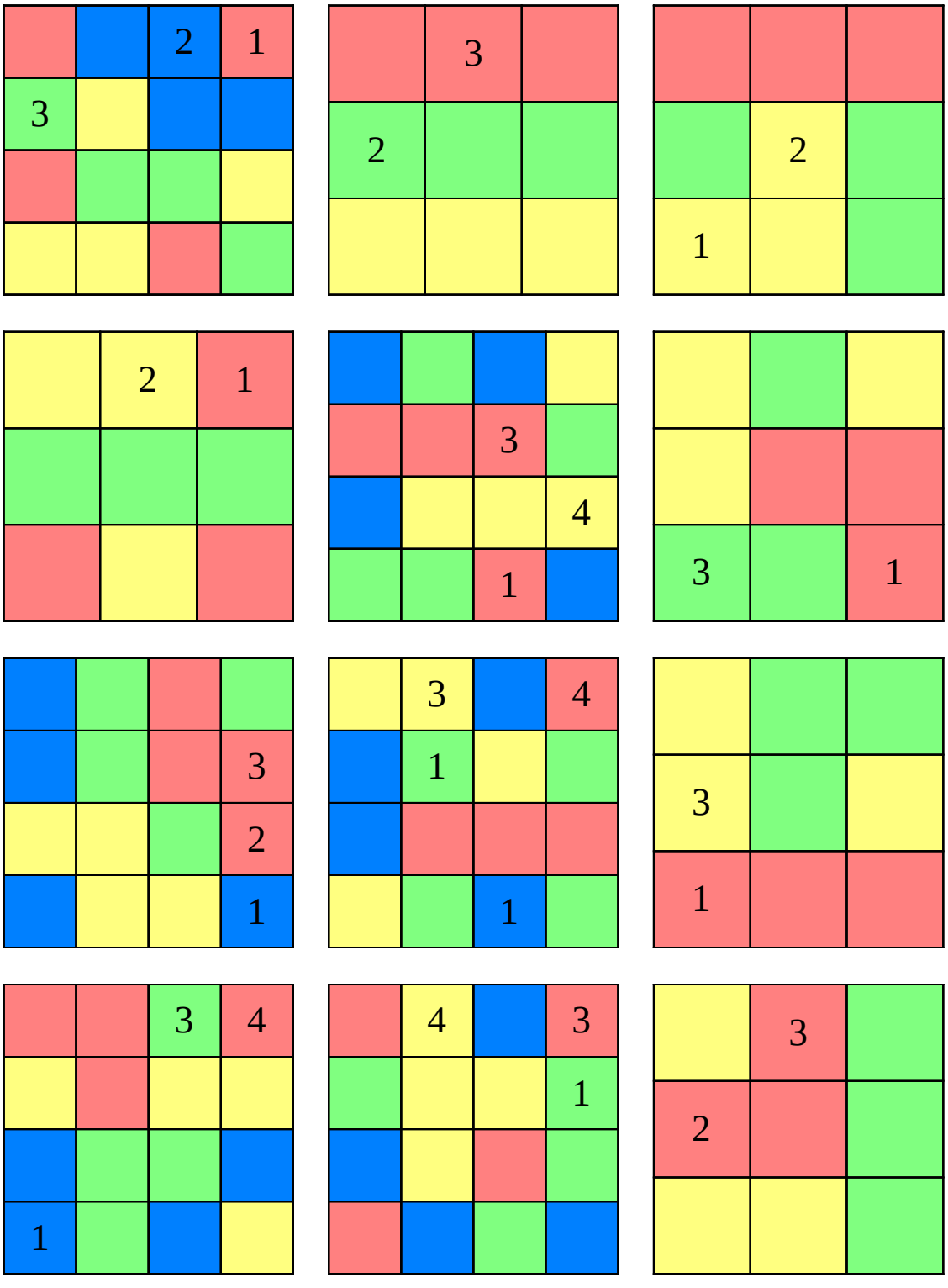


Bogdan Soban, G4G, 22. oktober 2021

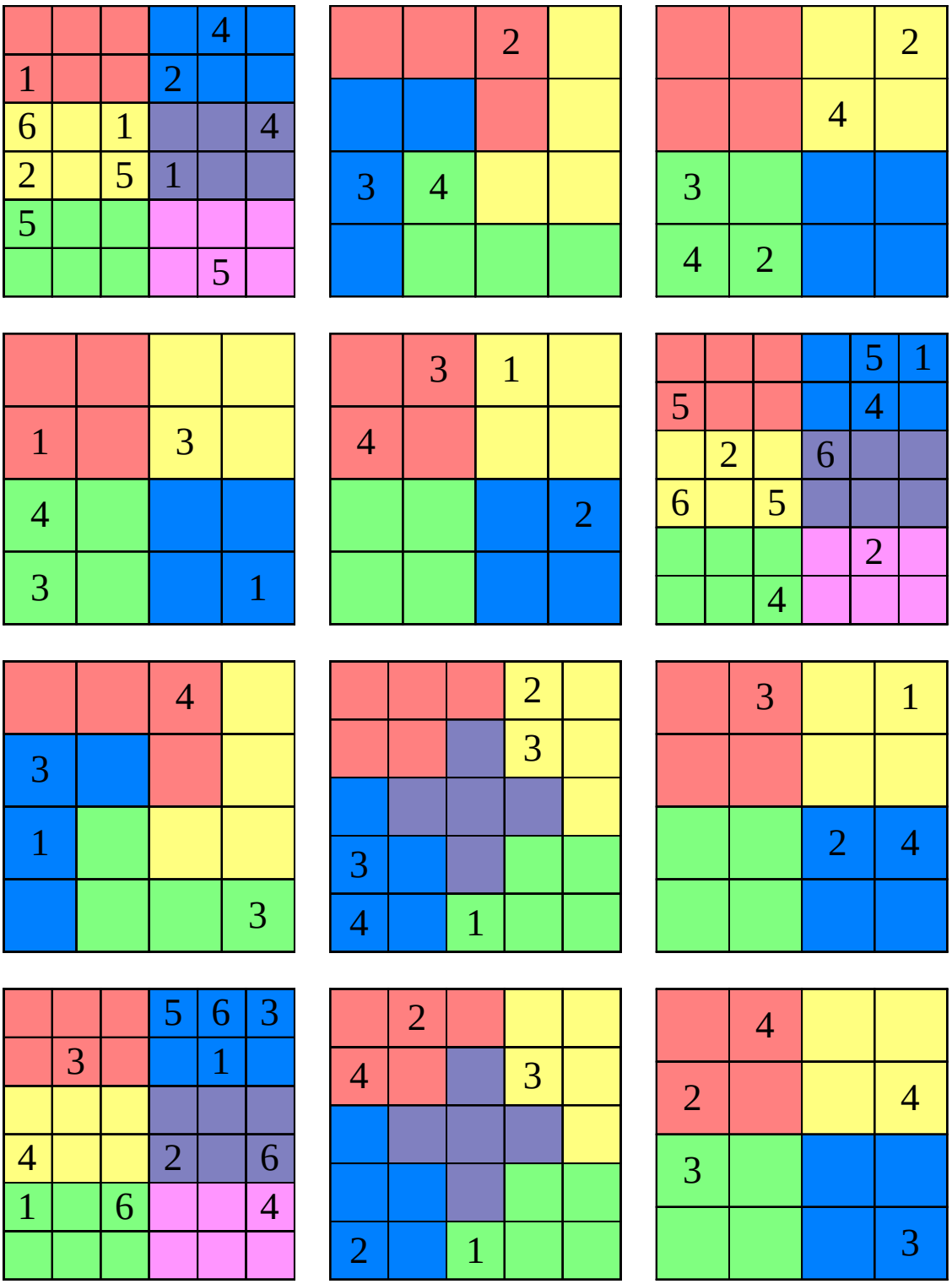
Barvni sudoku

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici, v vsakem stolpcu in v kvadratkih iste barve nastopalo vseh n števil.

1.

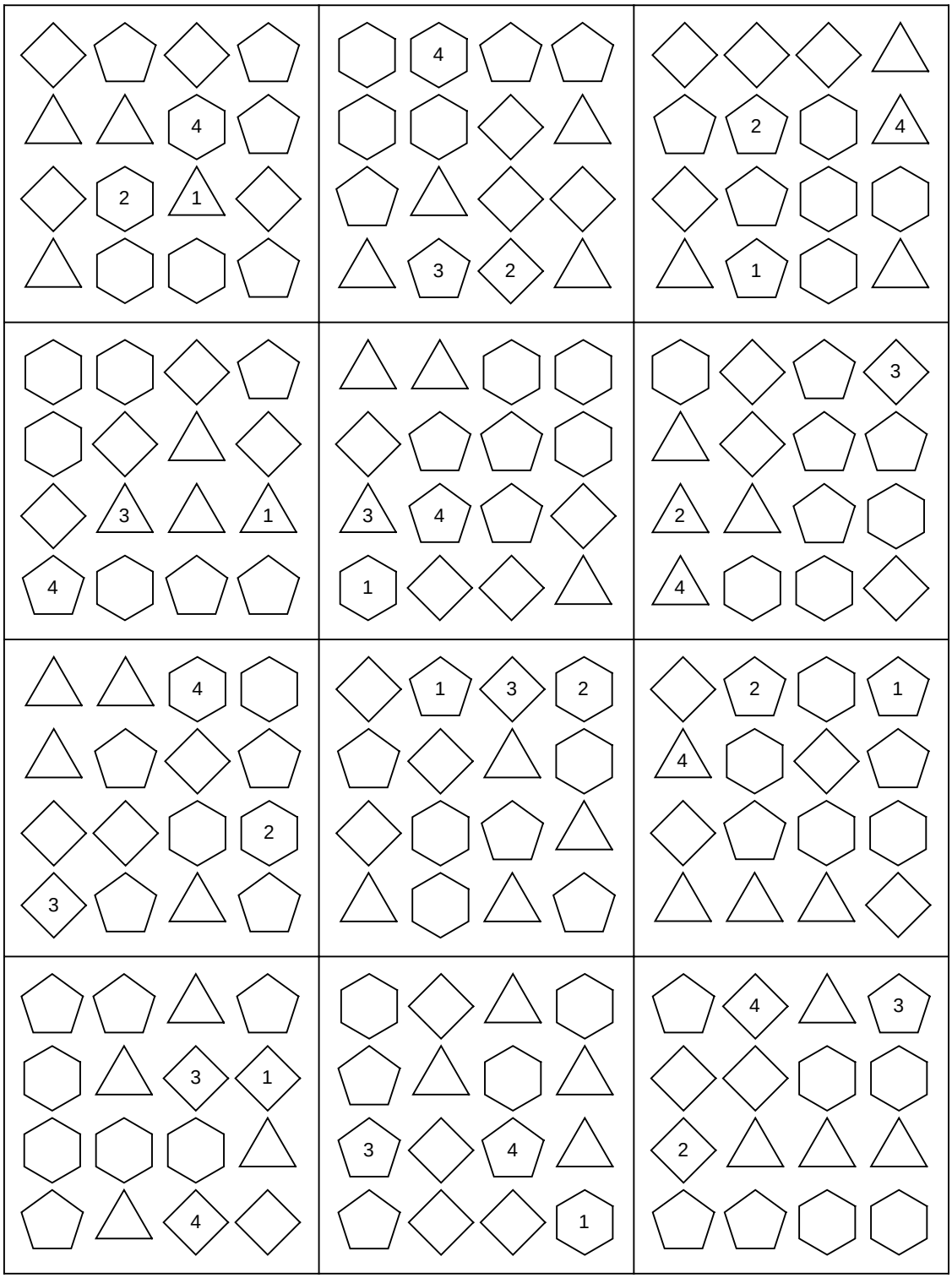


2.


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2 5 1
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3

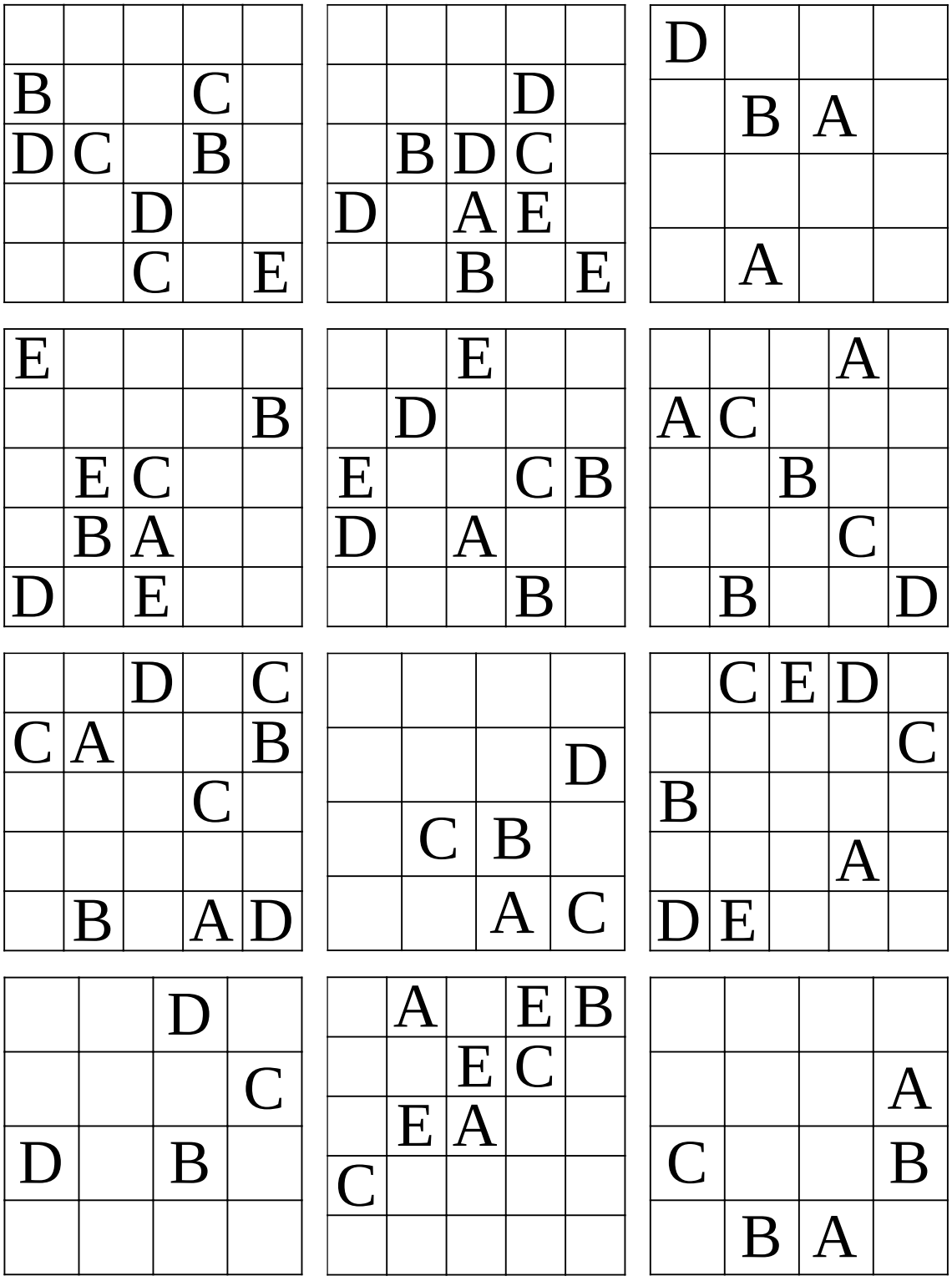
Sudoku z večkotniki

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici, v vsakem stolpcu in v skladnih večkotnikih nastopalo vseh n števil.



Latinski kvadrati

V n × n kvadratkov moraš vpisati začetne črke A, B, C, … tako, da bo v vsaki vrstici, v vsakem stolpcu nastopalo vseh n črk.



Sudoku s črkami

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici, v vsakem stolpcu in v kvadratkih z isto črko nastopalo vseh n števil.

A	D	E 5	B 2	A 4
D	E	E	A	A
D	D	C	B	D
E 1	B	C	E	B
A	B	C	C	C

C	C	D 2	B	A
A	C	D	A 4	E
E	B	E	A	D
B	D 1	B	E	B
C	E	D 3	A	C

B	D	A 1	E	A
E 4	C	E	E	C
C 5	C	A	B	B
D 2	D	C	E	B
D	D	A	B	A

E	E	E 5	D 3	A 4
A	B	A	C 5	A
D	B	E	D	C
E	B	D	D 1	B
B	C	C	C	A

E	B	B	B	C
E 5	A 4	A	D 1	B
B	A	D	E	D
D	A	D	A	C
E	C	C	E	C 2

A	E	B	D	A
D	B	B	C	A
D	C	D	C	E 3
D	E	C	E	E 2
A	A	B	B 5	C 1

E	D	D	A	D
B	D 5	B	C 3	E
D	E	C	A	B
A	B 2	C	E	C 1
E	A	C	A	B

D	B	C 4	E	B 5
B	A 2	B	E	D 3
A	A	A	B	E
D	A	E	E	D
C 3	C	C	D	C

C	B	C 1	C 2	C
B	E	D	E 5	E
B	E	E	B	D
C	D	D	A	A
B 3	A	A	D	A

D	B	E	C	B
C	A	A	C	B
B 2	C 4	D	D	D
B 1	C	A	E	A
E	D	A 3	E	E

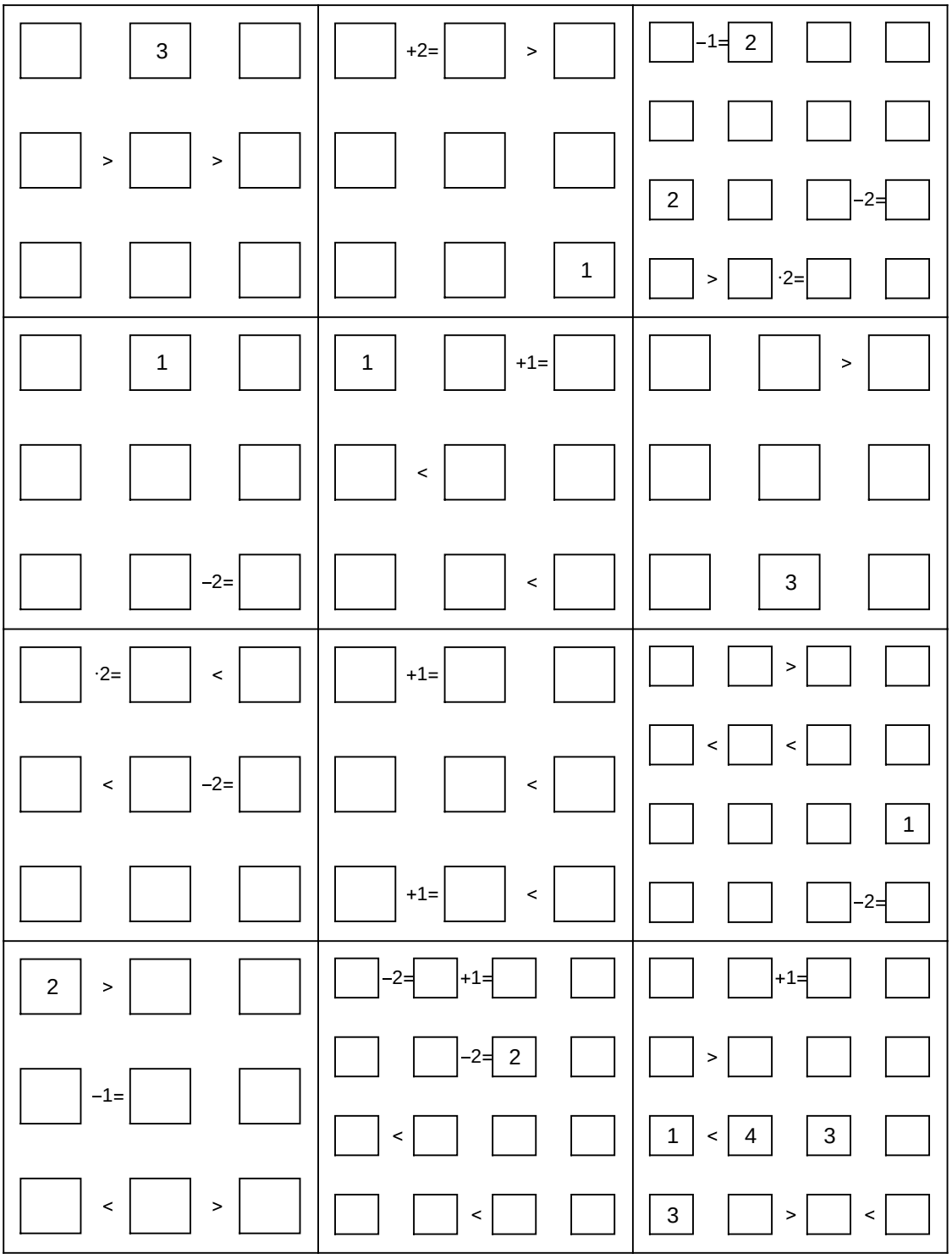
D	D	C	D 4	C
E 3	E	A	B	B
A 5	D	C	B	B
B	D	E	E	E
A 1	C	A	C	A

C	B	B	D	A
D	D	C	E	B
D	B	C 3	E	E
C	E	B 1	A	E
A	C	D 4	A 5	A

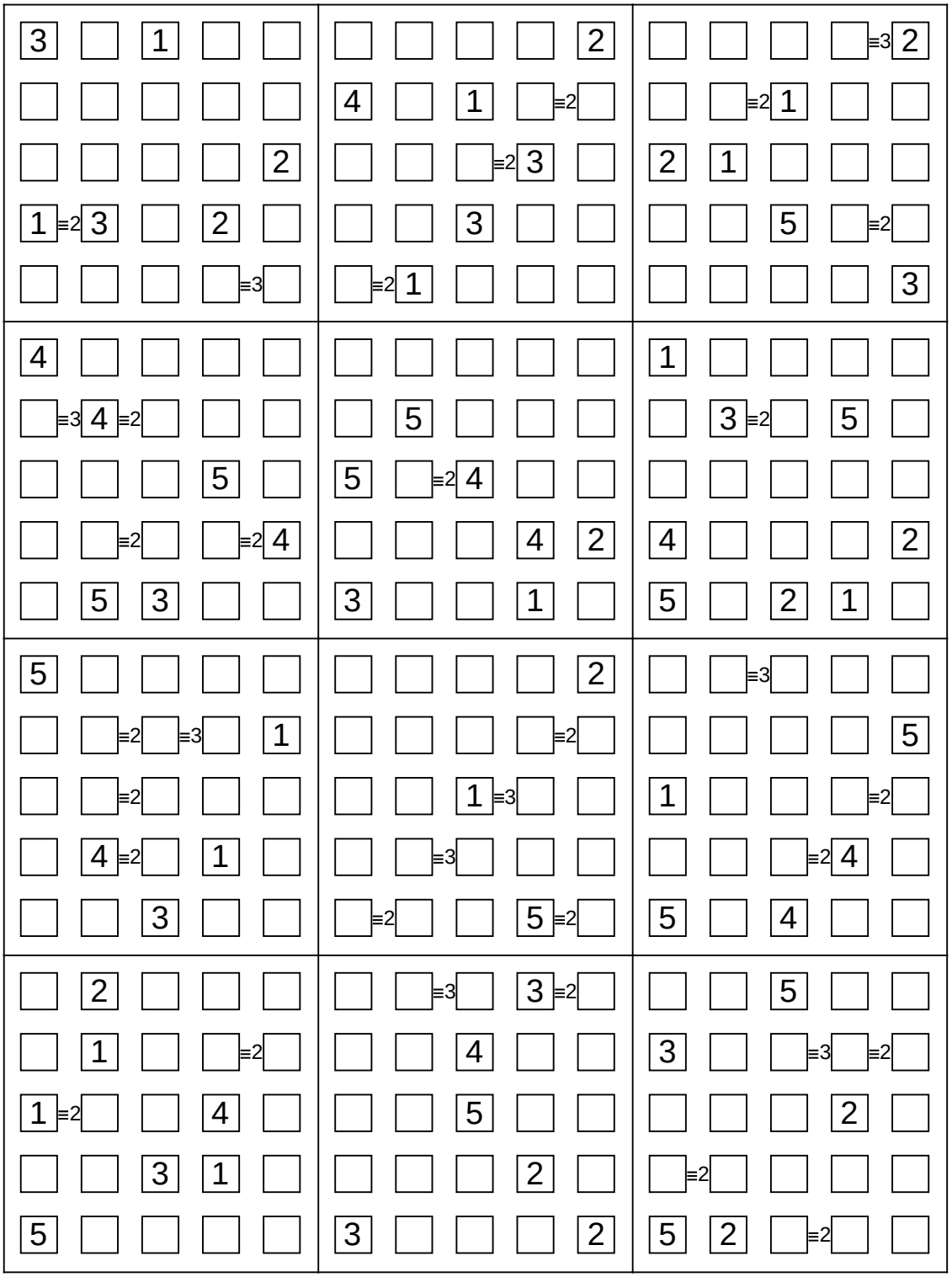
Futoshiki

V n × n kvadratkov moraš vpisati začetna naravna števila od 1 do n tako, da bo v vsaki vrstici in v vsakem stolpcu nastopalo vseh n števil ter da bodo izpolnjene vse relacije. Tu a ≡k b pomeni, da je razlika med a in b deljiva s k.

1.



2.


3 1
2
4 1 ≡2
≡2 3
2
1 ≡2 3 2
≡3
≡2 1
≡3 2
≡2 1
2 1
5 ≡2
3
4
≡3 4 ≡2
5
≡2 ≡2 4
5 3
5
5 ≡2 4
4 2
3 1
1
3 ≡2 5
4 2
5 2 1
5
≡2 ≡3 1
≡2
≡2
4 ≡2 1
3
≡3
1 ≡3
≡3
≡2 5 ≡2
≡3
5
1 ≡2
≡2 4
2
1 ≡2
≡2
4
3
≡3 ≡2
1 ≡2
4
5
2
≡2
3 1
2
5
3
2
5 2 ≡2

Določi razpored



A JE SOSEDA OD *C*.	N
A JE LEVO OD *B*.	R



A JE DESNO OD *C*.	N
A JE SOSEDA OD *B*.	N
B JE LEVO OD *C*.	N



A JE SOSEDA OD *B*.	N
A JE LEVO OD *B*.	N
B JE LEVO OD *D*.	N



B JE LEVO OD *D*.	N
B JE LEVO OD *C*.	R
A JE LEVO OD *C*.	N
A JE DESNO OD *D*.	R



A JE LEVO OD *D*.	N
B JE SOSEDA OD *C*.	N
D JE LEVO OD *E*.	N
B JE DESNO OD *E*.	N
A JE DESNO OD *C*.	N



A JE LEVO OD *C*.	R
B JE DESNO OD *E*.	R
D JE DESNO OD *E*.	N
A JE DESNO OD *B*.	R
B JE SOSEDA OD *D*.	N



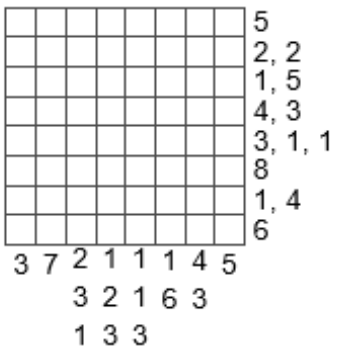
B JE DESNO OD *C*.	N
C JE SOSEDA OD *E*.	N
A JE LEVO OD *E*.	N
A JE DESNO OD *C*.	R
C JE DESNO OD *E*.	N

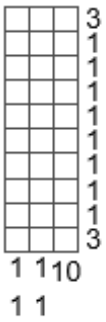


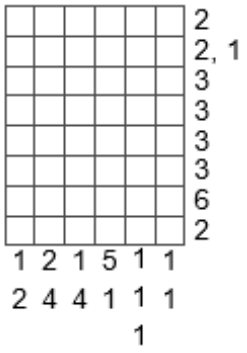
A JE SOSEDA OD *E*.	N
B JE SOSEDA OD *D*.	R
C JE SOSEDA OD *E*.	R
A JE SOSEDA OD *D*.	R
B JE LEVO OD *C*.	R
B JE SOSEDA OD *E*.	R

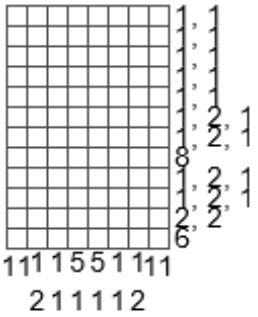
Gobelini

Kvadratke v razpredelnici moraš pobarvati sivo tako, da bo zaporedje sivih pasov v vrstici ustrezalo zaporedju števil na desni in da bo zaporedje sivih pasov v stolpcu ustrezalo zaporedju števil pod njim.

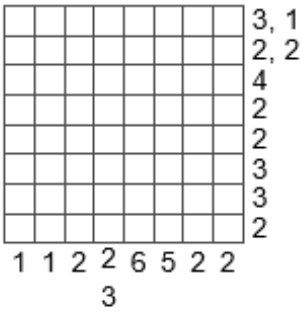


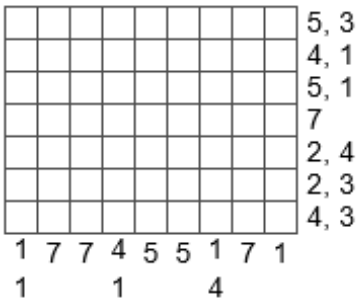


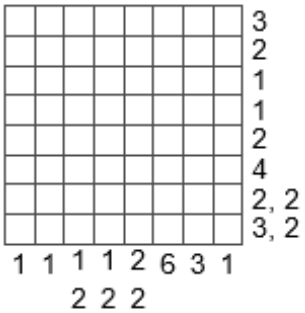


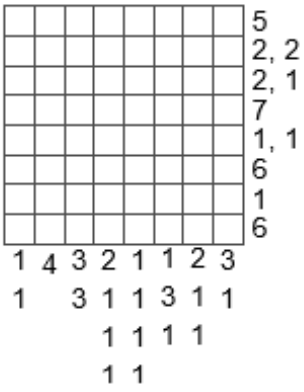


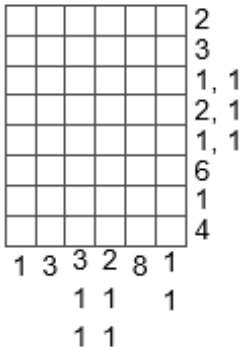


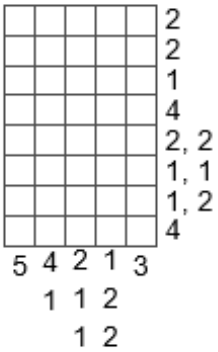


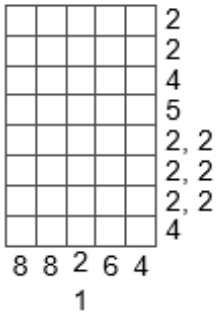






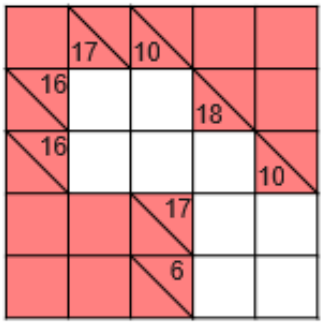


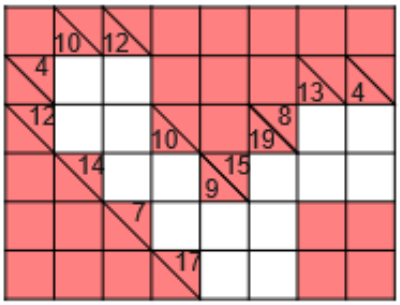


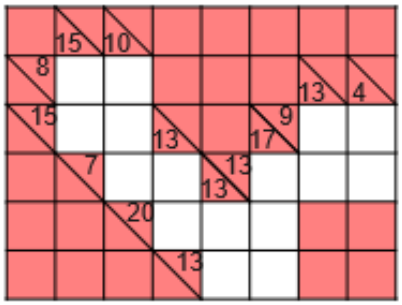


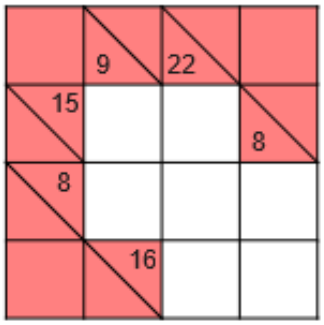
Križne vsote

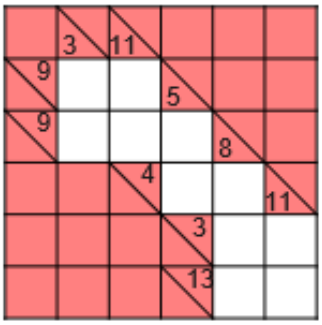
Naloga reševalca je, da izpolni bele kvadratke s števkami od 1 do 9 tako, da je vsota števk v zaporednih belih kvadratkih po vrsticah in stolpcih enaka številu, ki je zapisano v rdečem kvadratku na začetku vrstice (stolpca) nad (pod) diagonalo. Pri tem pa morajo biti vse števke v posamezni vrstici (stolpcu) različne.

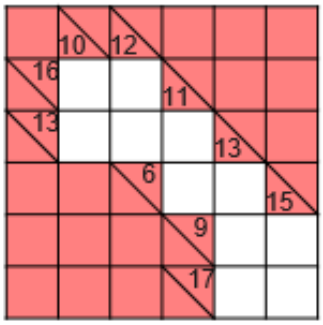


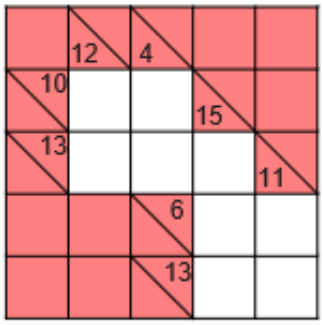


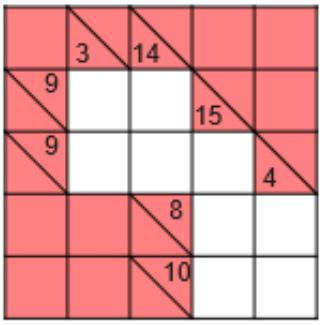


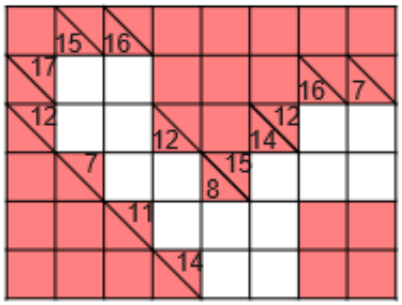


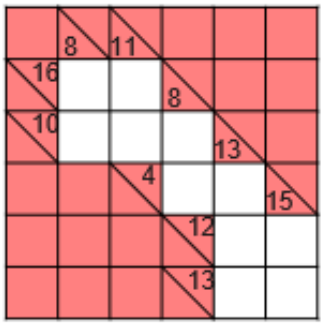


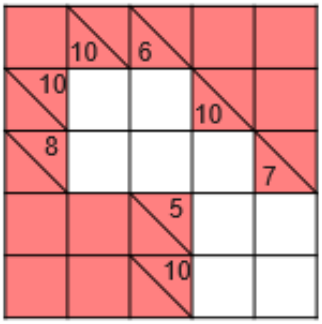


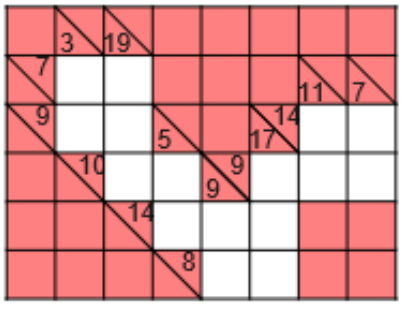






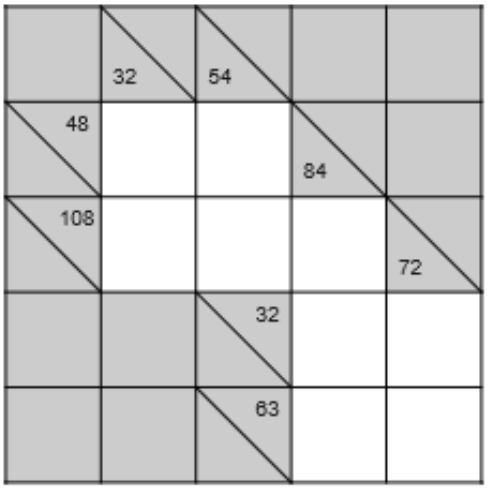


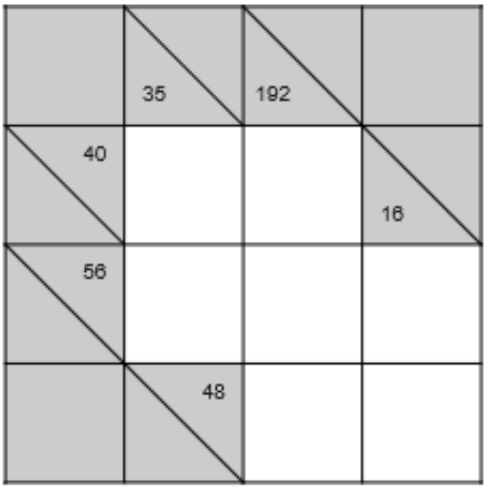


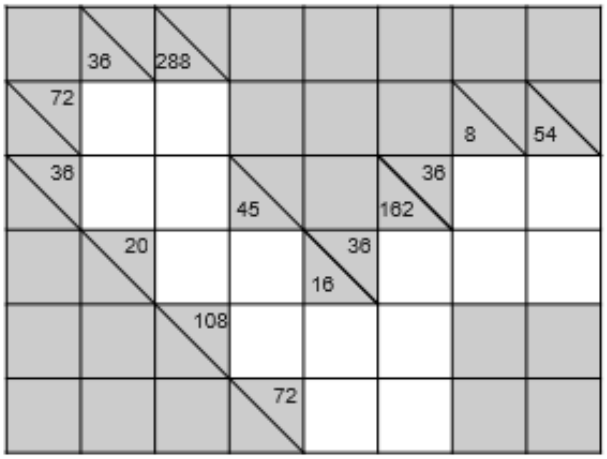


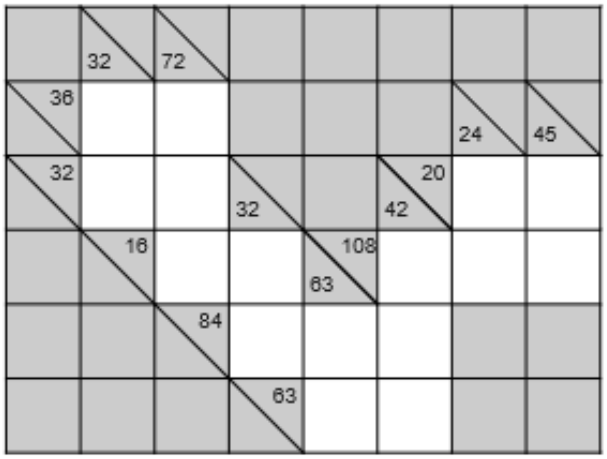
Križni produkti

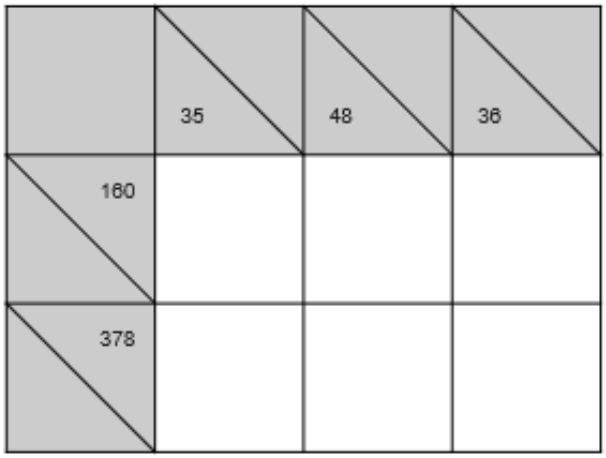
Naloga reševalca je, da izpolni bele kvadratke s števkami od 2 do 9 tako, da bo zmnožek števk v zaporednih belih kvadratkih po vrsticah in stolpcih enak številu, ki je zapisano v sivem kvadratku na začetku vrstice (stolpca) nad (pod) diagonalo. Pri tem pa morajo biti vse števke v posamezni vrstici (stolpcu) različne.

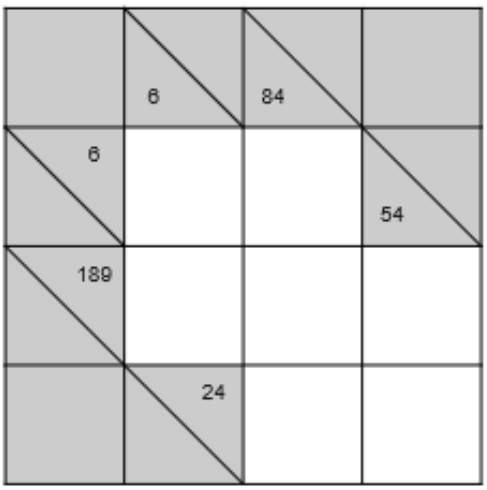






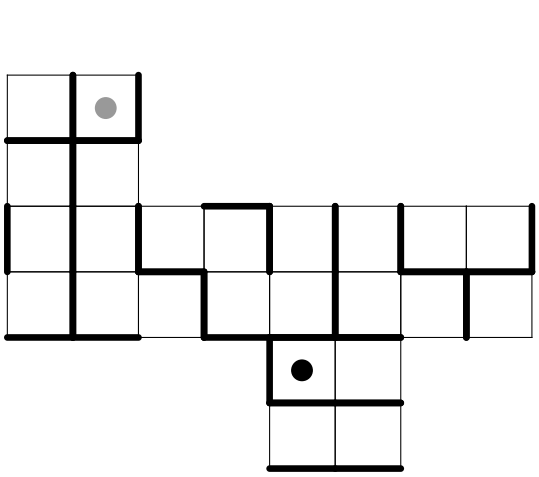


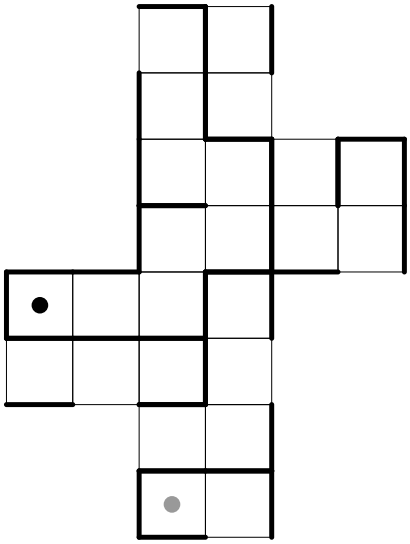


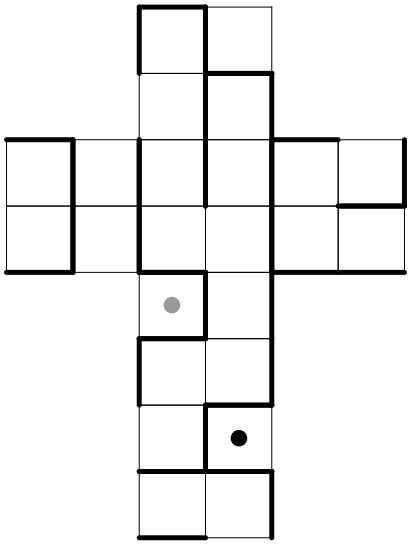


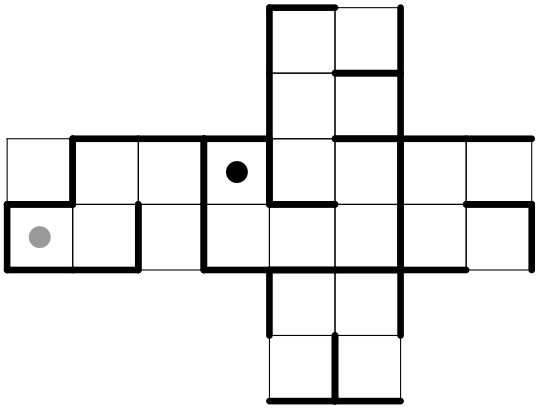
Labirint na kocki

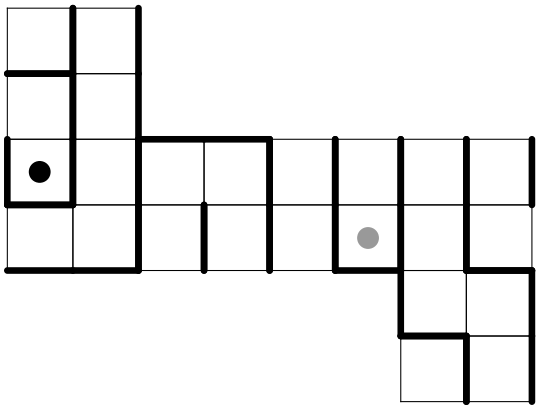
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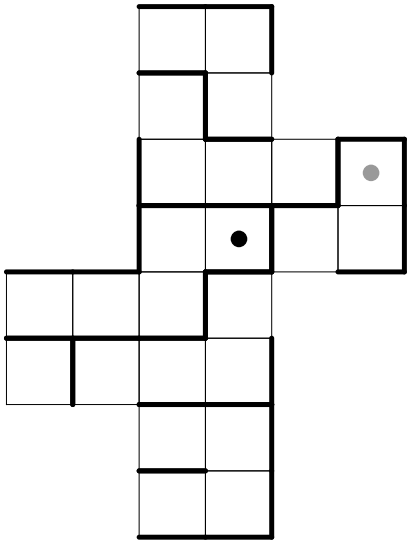






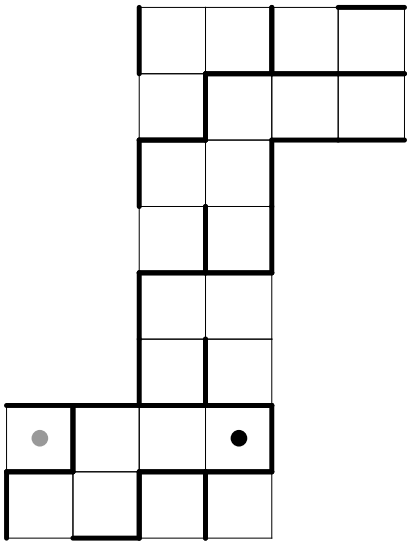


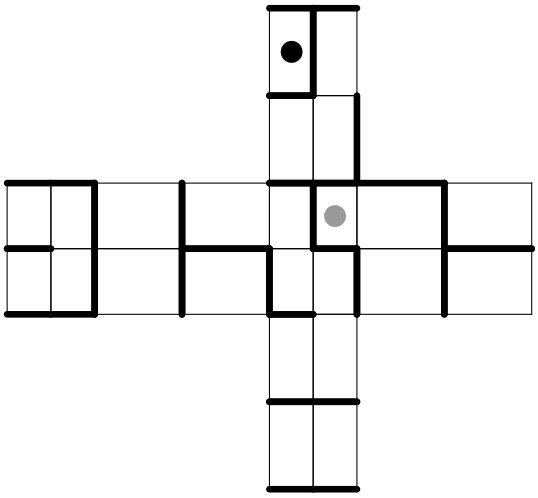


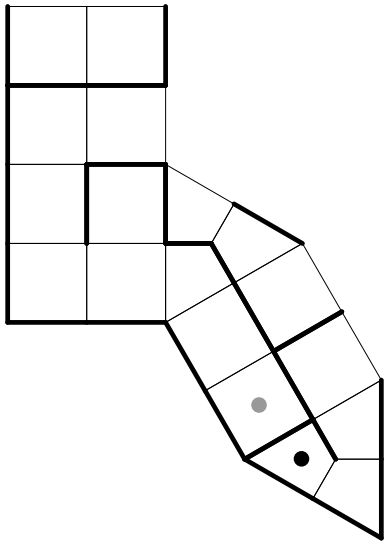


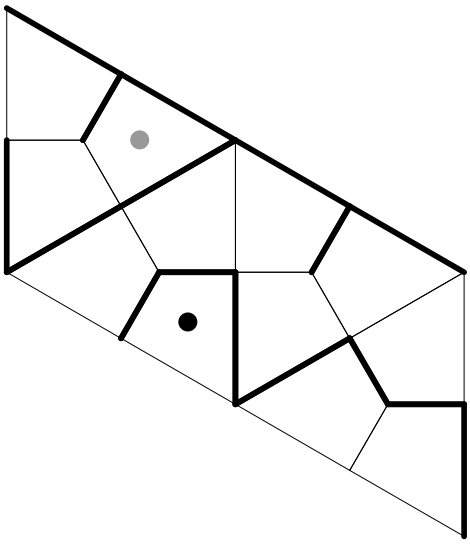
Labirinti na enostavnih poliedrih

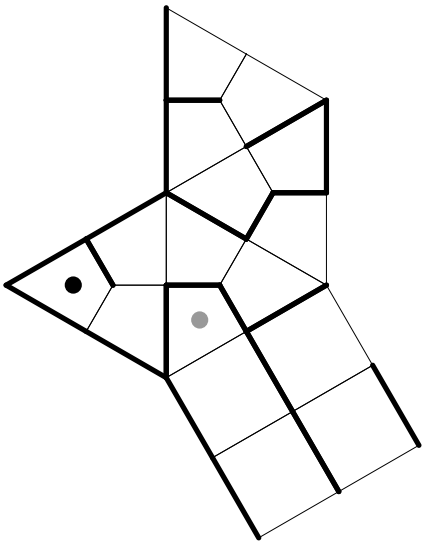
Poveži točki na poliedru:

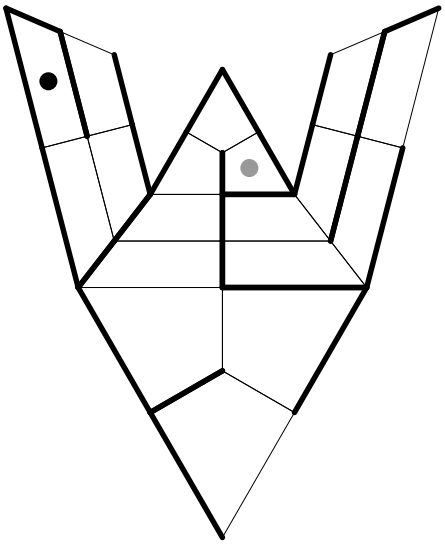








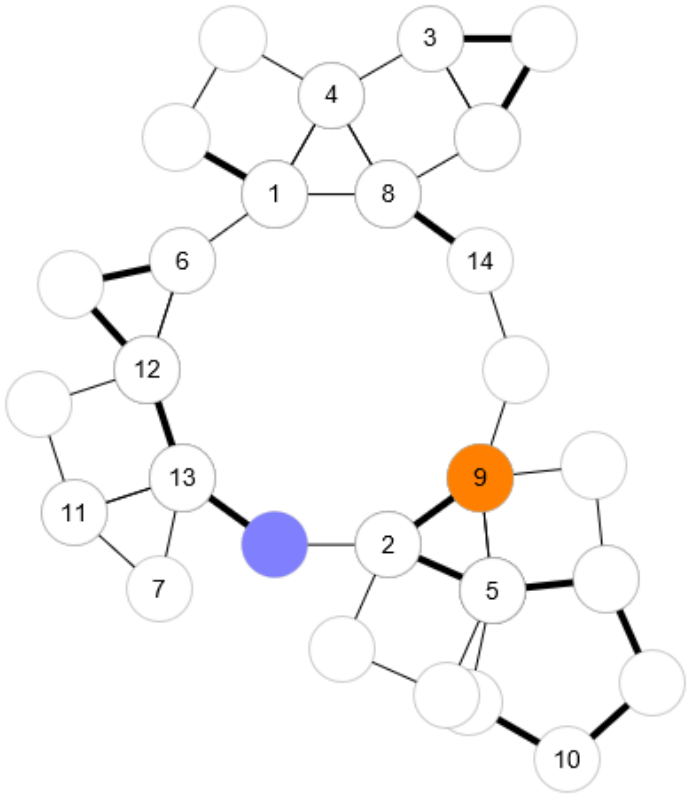




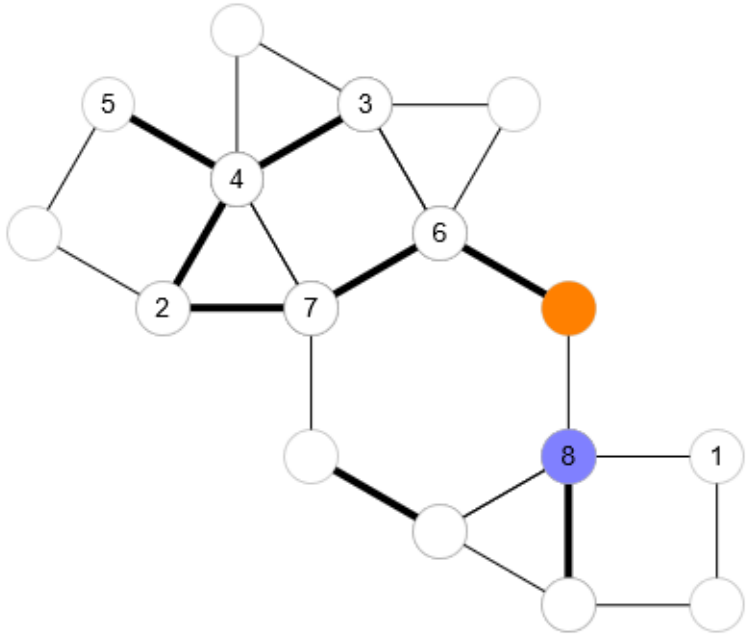
Labirinti na robovih poliedra

V naslednjih nalogah moramo povezati dve oglišči poliedra, ki je podan z mrežo. Poiskati moramo pot od oranžne do modre točke. Iz ene točke lahko gremo do druge točke, če je med njima debelejša črta ali pa točki predstavljata isto oglišče poliedra.

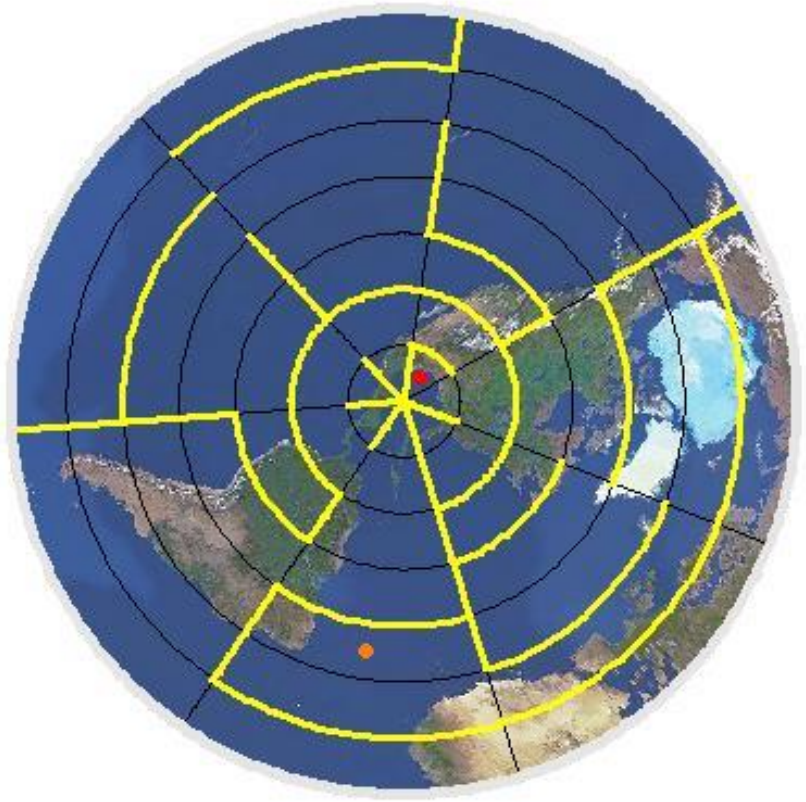
1.

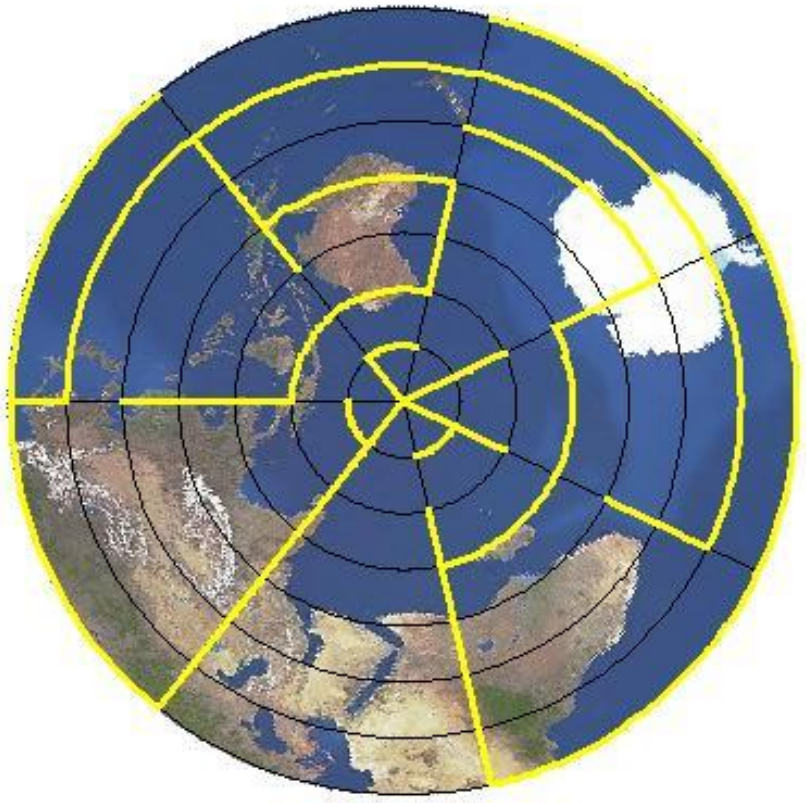


2.



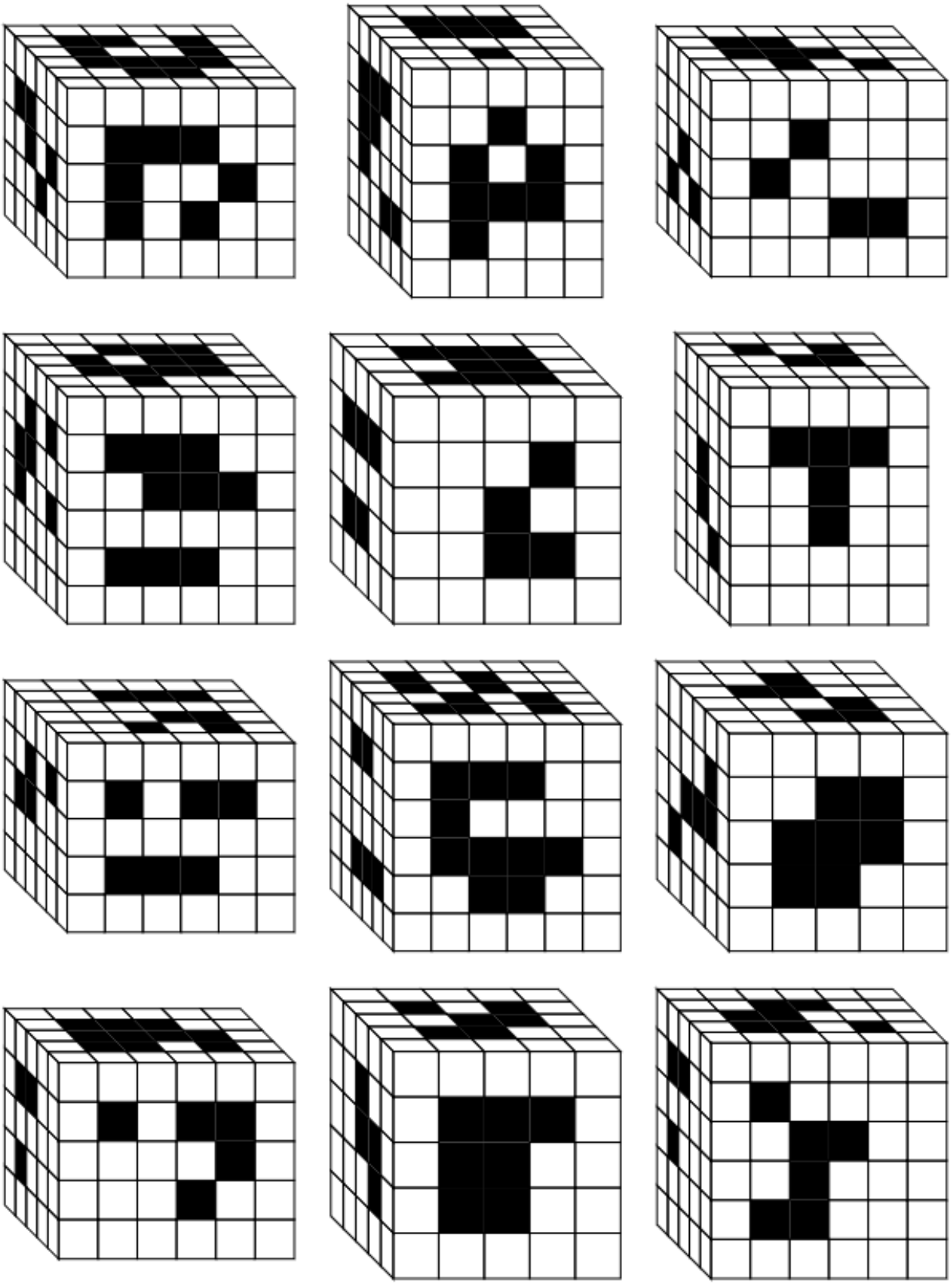
Labirint na zemljevidu





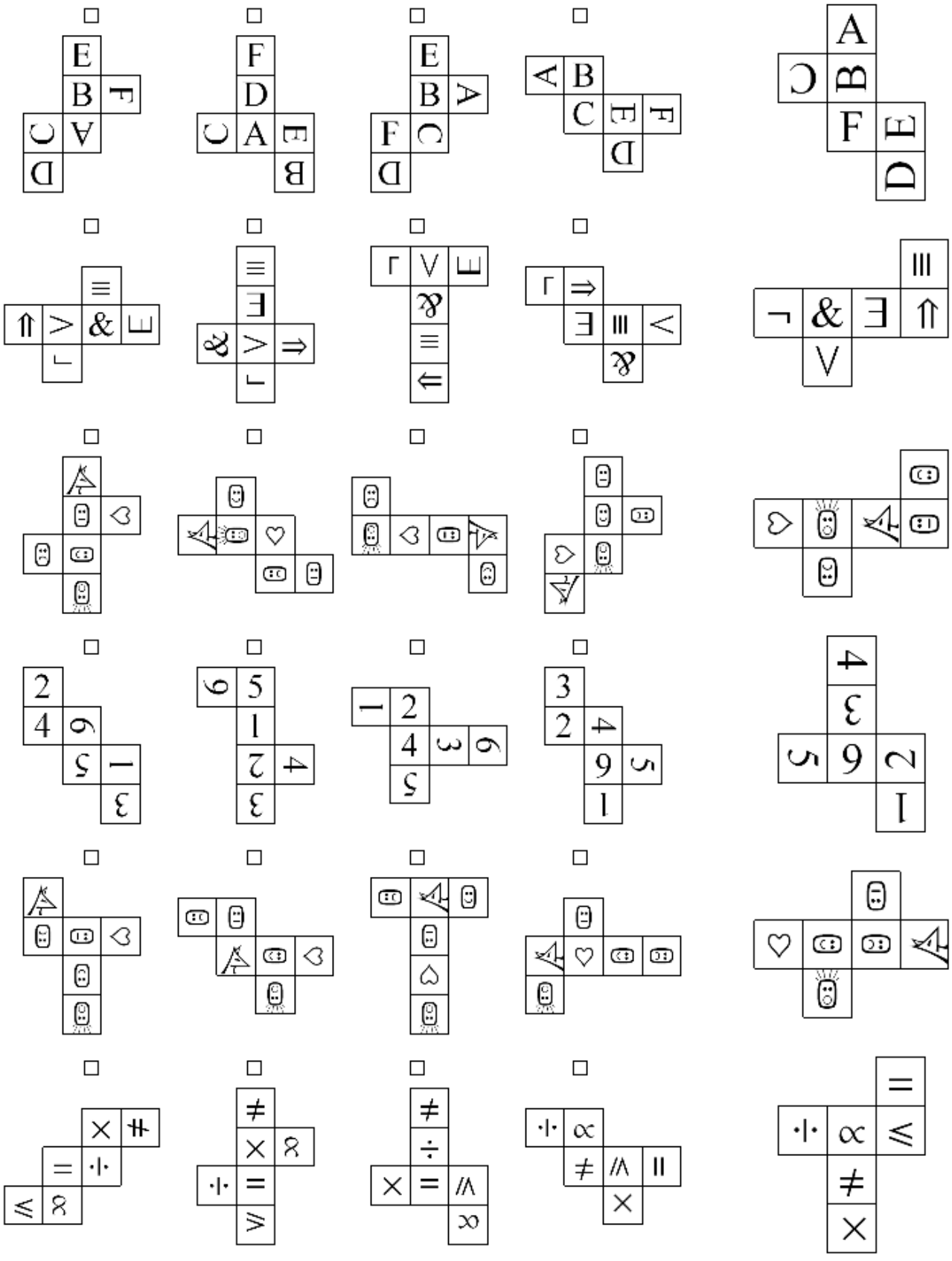
Odstranjene kocke

Dan je kvader, ki sestoji iz kockic. Odstranimo vse kocke, ki so zaznamovane črno od vrha do dna, od leve do desne in od spredaj do zadaj. Koliko kock smo odstranili?



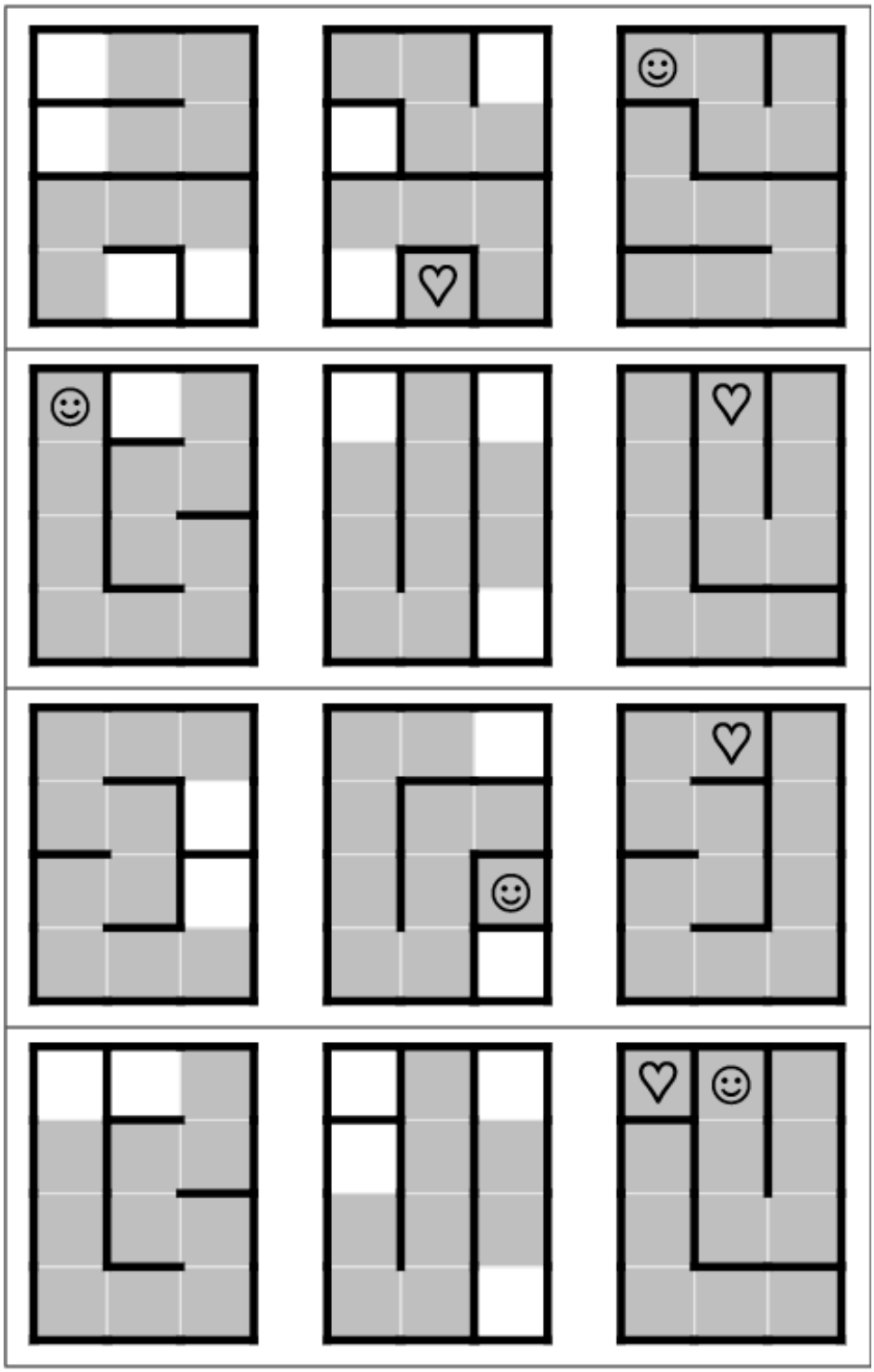
Kocki določi mrežo

Vsaki mreži na desni (večja mreža) določi mrežo iste kocke na levi.



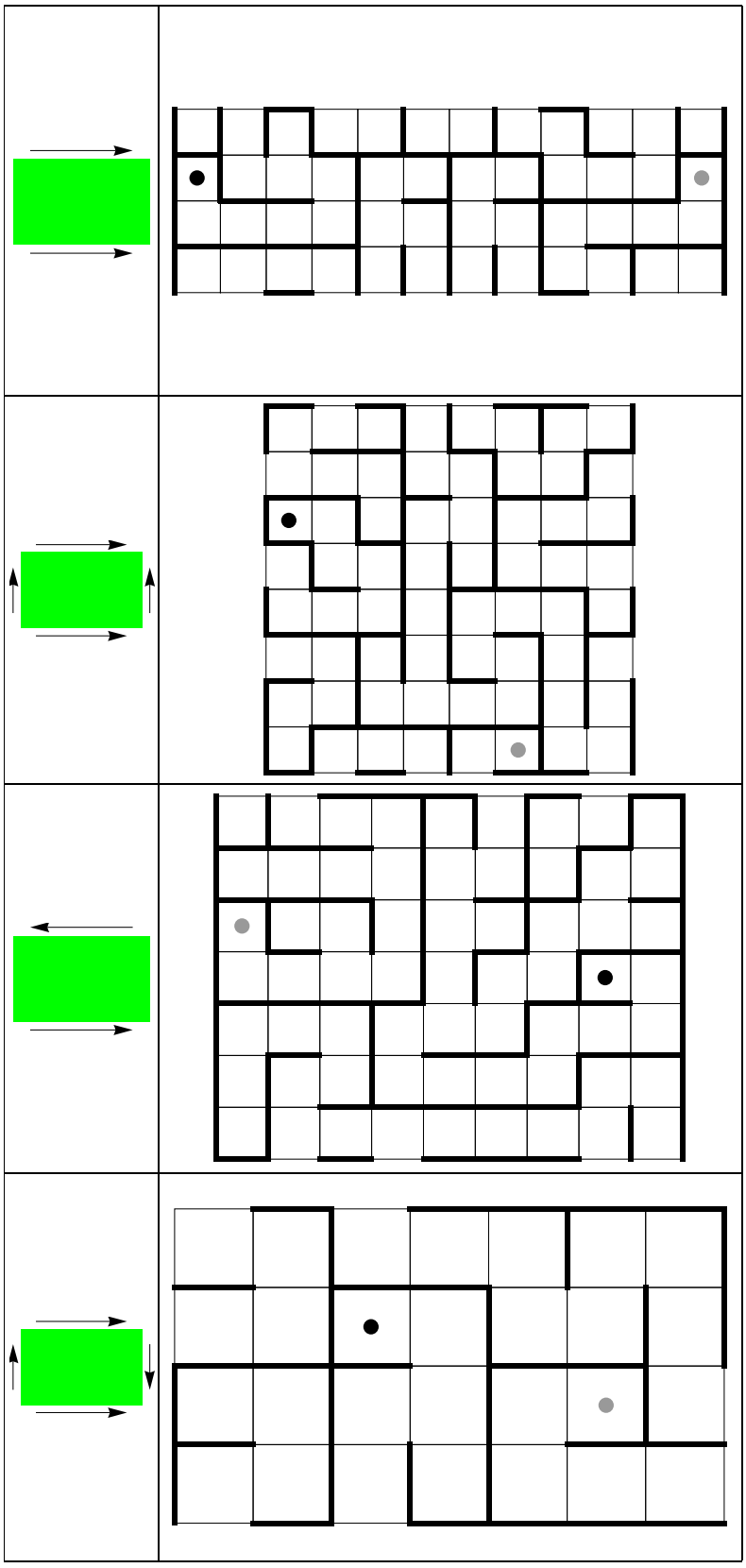
Labirint v kvadru

Kvader sestoji iz vodoravnih slojev kockastih oddelkov (zgornji, srednji in spodnji sloj so dani od leve proti desni). Odebeljene črte preprečujejo prehajanje med sosednjima oddelkoma istega sloja. Med oddelkom in oddelkom neposredno pod njim lahko prehajamo, če in samo če je prvi pobarvan belo.
Poišči najkrajšo pot od oddelka z 1(smeško) do oddelka z A(srce)! Pot označi z zaporednimi naravnimi števili. Prvi oddelek je že označen z 1, vsak naslednji sosednji oddelek (kocko) pa s številom, večjim za 1.



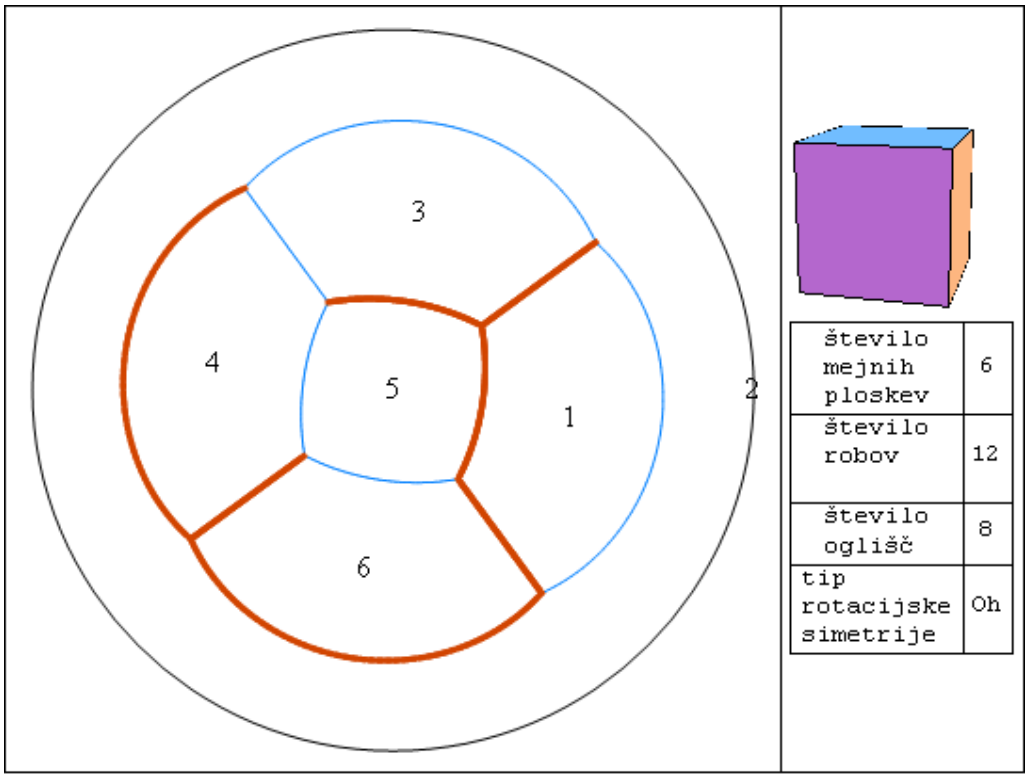
Labirinti na ploskvah

Podan je labirint na pravokotniku. Moramo poiskati pot od temnejše do svetlejše pike. Prehod med sosednjimi kvadratki je možen, če med njima ni odebeljene črte. Skica na levi pomeni, kako sta nasprotni stranici pravokotnika povezani (miselno ju moramo zlepiti).

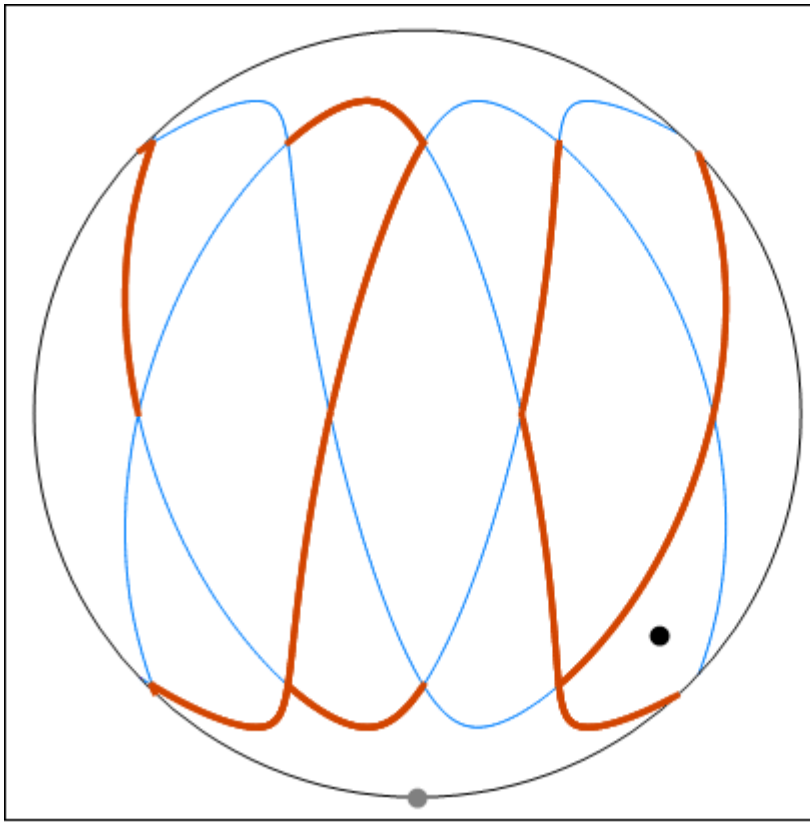


Labirinti na projekcijah teles

Telo je projicirano v ravnino. Na projekciji je podan labirint, kjer odebeljene črte preprečujejo prehod iz projekcije mejne ploskve na projekcijo sosednje mejne ploskve.



število mejnih ploskev	6
število robov	12
število oglišč	8
tip rotacijske simetrije	Oh

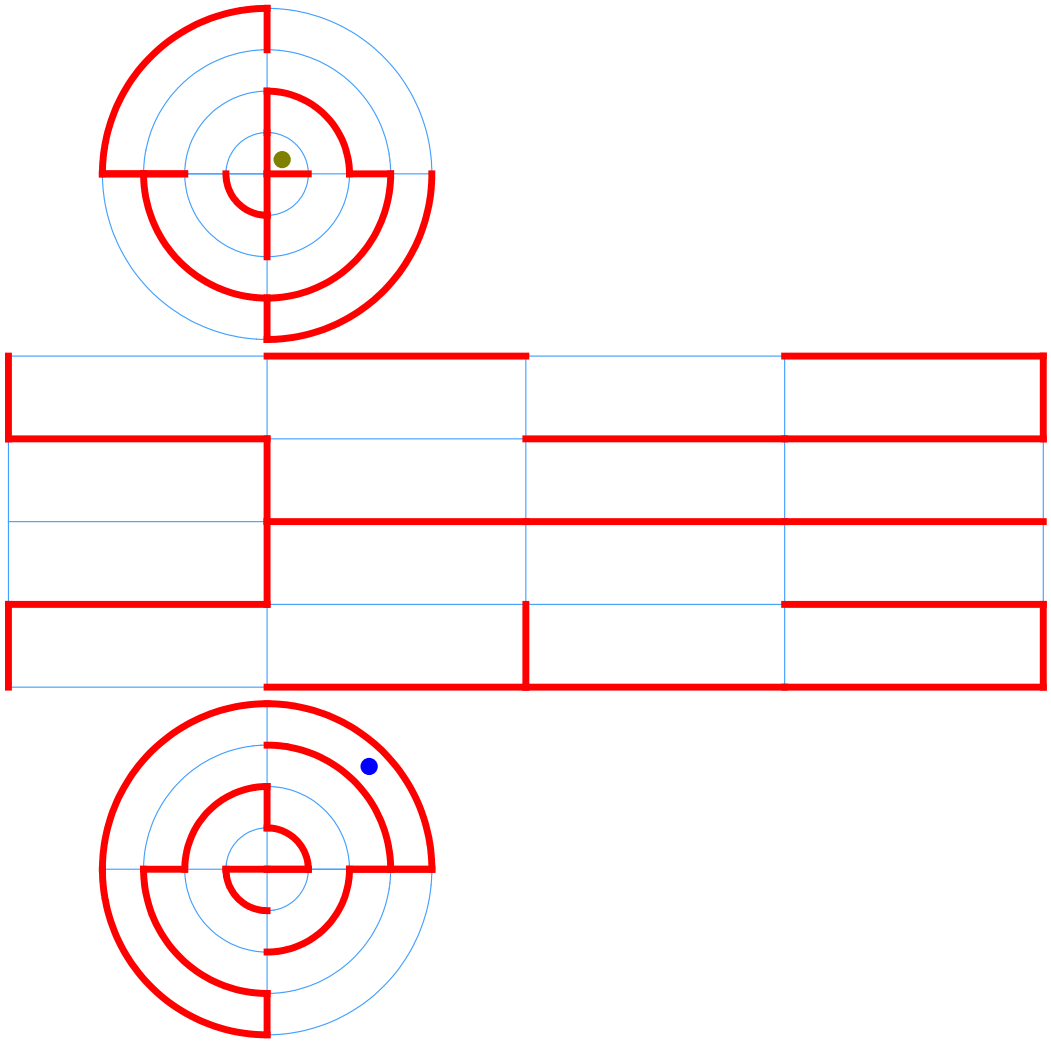




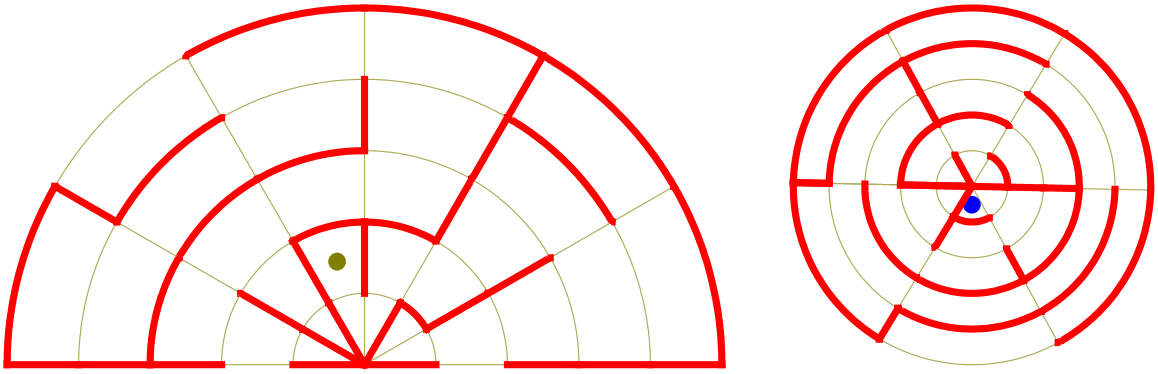
število mejnih ploskev	
število robov	
število oglišč	
tip rotacijske simetrije	

Labirinti na mreži valja in stožca

1.

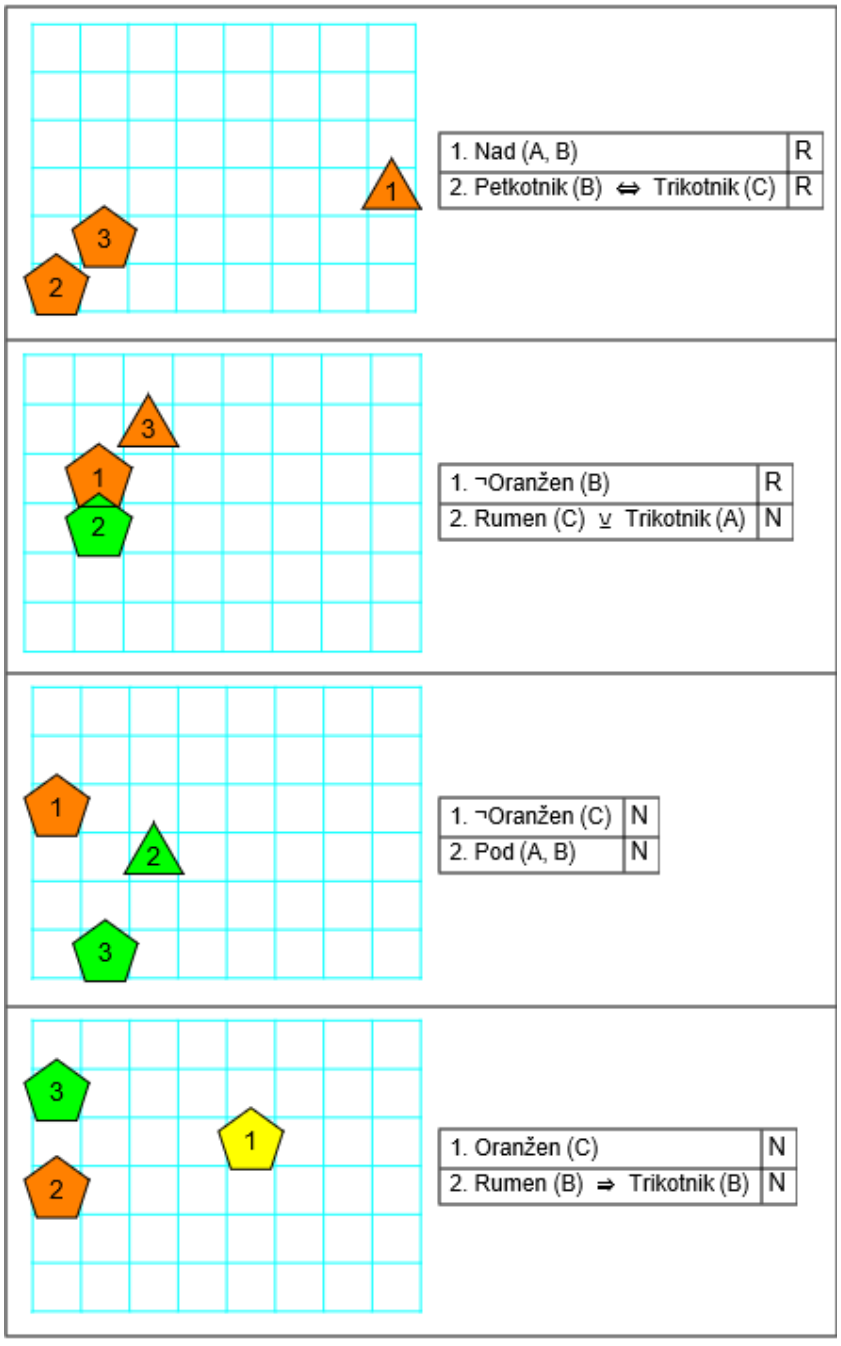


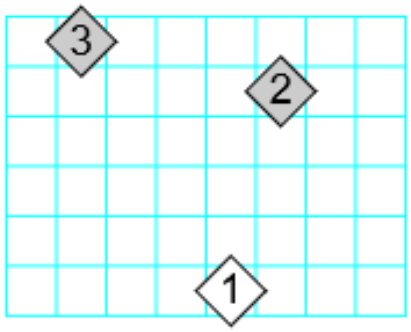
2.



Analiziraj pogoje nalog

Dobro definirana naloga je naloga, pri kateri so njeni pogoji potrebni in zadostni za njeno rešitev. To pomeni, da noben pogoj ni odveč in da ima naloga enolično rešitev. Pri zastavljeni nalogi imamo lahko več možnosti:
Naloga nima rešitve, pogoji so protislovni.
Naloga ima več rešitev, to je, pogoji niso zadostni (za enolično rešitev).
Naloga ima enolično rešitev, vendar pogoji niso potrebni (vsaj en pogoj bi lahko izpustili in bi naloga še vedno imela enolično rešitev).
Naloga ima enolično rešitev in pogoji so potrebni (neodvisni) in seveda zadostni. Naloga je dobro definirana.
V naslednjih nalogah moramo ugotoviti, kako je s pogoji naloge.
Poiskati moramo imena A, B,C, … likov, ki so označeni z 1, 2, 3, …, če so izpolnjeni pogoji na desni strani slike. Ugotoviti moramo tudi, ali so pogoji neodvisni.

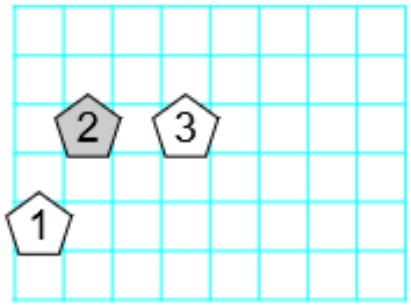




1. Pod (A, B)	N
2. Trikotnik (B) ⊻ Bel (B)	N

1	2	3

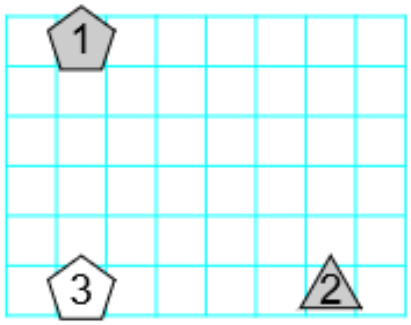
1. pogoj			
2. pogoj			



1. Levo od (A, C)	N
2. Bel (C) ∨ Levo od (A, C)	N

1	2	3

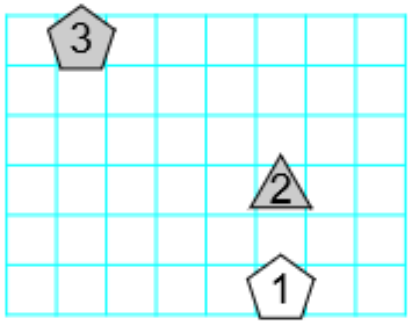
1. pogoj		
2. pogoj		



1. Levo od (A, B)	N
2. Bel (A) ⇒ Trikotnik (B)	N

1	2	3

1. pogoj			
2. pogoj			



1. Trikotnik (B) ⊻ Bel (A)	R
2. Siv (B) ⇒ Levo od (A, B)	R

1	2	3

1. pogoj		
2. pogoj		

Logična naloga

Štiri prijateljice (Ana, Maja, Eva, Ada) imajo z različne konje (Blisk, Tornado, Mistral, Reno), ki so različnih pasem (poni, frizijec, arabec, lisec).
Za vsako določi ime, ime konja in njegovo pasmo.

1. Maja nima ne lisca ne ponija.
2. Eva nima ne Rena ne Bliska.
3. Blisk ni ne frizijec ne lisec.
4. Mistral je arabec.
5. Reno ni lisec.
6. Ana nima ponija.
7. Eva nima Tornada.

	Blisk	Tornado	Mistral	Reno	poni	frizijec	arabec	lisec
Ana								
Maja								
Eva								
Ada								
poni								
frizijec								
arabec								
lisec								

ime	konj	pasma
Ana		
Maja		
Eva		
Ada		

Naloga v esperantu

Tri amikinoj (Iva, Jana, Misxa) havas tri cxevalojn (Serpento, Sxtormo, Tornado) de diversaj rasoj (poneo, lipizzaner, islandano) kaj venas el diversaj urboj (Ljubljana, Jesenice, Maribor).
Divenu iliajn nomojn, la nomojn kaj rasojn de iliaj cxevaloj kaj la urbojn, el kiu iliaj cxevaloj venas.

1. Iva havas nek islandanon nek lipizzaneron.
2. Sxtormo venas nek el el Jesenice nek el Ljubljana.
3. Serpento ne estas el Ljubljana.
4. Poneo ne estas el Maribor.
5. Jana ne havas Sxtormon .
6. Islandano ne estas el Ljubljana.
7. Islandano ne estas el Maribor.

	Serpento	Sxtormo	Tornado	poneo	lipizzaner	islandano	Ljubljana	Jesenice	Maribor
Iva									
Jana									
Misxa									
Ljubljana									
Jesenice									
Maribor									
poneo									
lipizzaner									
islandano									

nomo	cxevalo	raso	urbo
Iva			
Jana			
Misxa			

Mandala – sveta geometrija

Veste, zakaj vzorci mandal tako pritegnejo pogled tako umetniških duš, kot tudi strogim matematikom, fizikom, ekonomistom in logikom?

Zato, ker ti geometrijski vzorci hkrati zadovoljijo levo in desno možgansko polovico. Levo stran zadovolji po želji logičnih, zaporednih in objektivnih podatkih, desno hemisfero pa po naključnih, intuitivnih in abstraktnih figurah.

Vzorci mandal so arhitektura vesolja, ki jo lahko zasledimo vsepovsod v naravi. V cvetlicah, školjkah, solati, snežinkah, storžih, sončnice…Najpogostejši vzorec iz narave je Fabionaccijevo zaporedje.

Mandale se vzorčijo iz sredine navzven v neskončnost. Prinašajo tako energijo, kot umirjenost skozi središčno širjenje navzven, saj središče predstavlja naš izvor in kamor se vedno znova vračamo. Iz točke, iz stvarstva; V ljubezen, v mir, v edinstveno in resnično.





Upodabljanje mandal pa je svojevrsten terapevtski proces.

Vsak, ki se je lotil ustvarjanja mandal, v kakršnikoli obliki in tehniki, je bistvo procesa dojel šele, ko se je lotil risanja. Gre za nenavaden učinek na psiho. Zase lahko rečem, da se sprva niti nisem zavedala globokega pomena mandal. Začela sem jih risati, ker so se mi zdele preprosto estetske, po drugi strani pa so me vzorci iz središča intuitivno pomirajali.





Kmalu zatem mi je postalo jasno, da za tako ‘delo’ potrebujem mir, čas in veliko potrpljenja. Še nekoliko kasneje se je izkazalo, da gre za process iz globine. Za osredotočanje in nenavaden občutek miru, za domišljijo, sinhronost barv, predvsem pa za izraznost stanja iz podzavesti. Opazila sem tudi, kako srečno in mirno se počutim, predvsem v stiku s sabo.



Moja največja strast je slikanje osebnih mandal na platno, hkrati pa jih zelo upodabljam na različne material, kot so keramične lončke, dežnike, lesene in kovinske amulete. Letos pa sem v samozaložništvu izdala svoj prav poseben koledar mandal 2022, ki se ga lahko celo posadi in z malo ljubezni zrastejo travniške cvetlice (naročilnica na https://ananasart.blog/narocilo-koledarja).

Poskusite! Tudi vas vabim k ustvarjanju mandal in pokušnji njenih blagodejnih učinkov.

Avtorica besedila in mandal: Tina Šnuderl
FB: Tina Snuderl
Blog: ananasart.blog

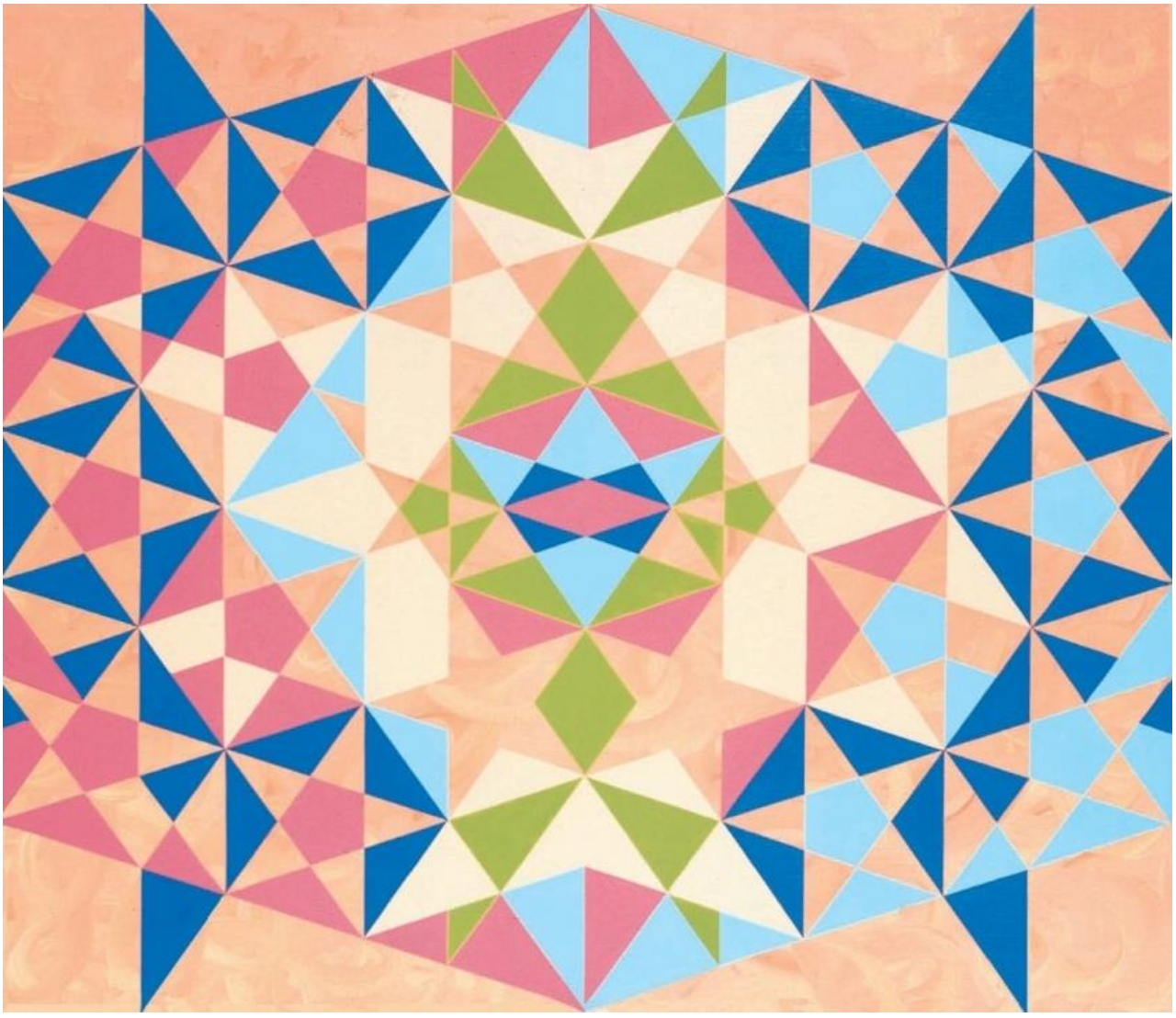
Ljubljana, 25.10.2021



Umetnica Teja Krašek

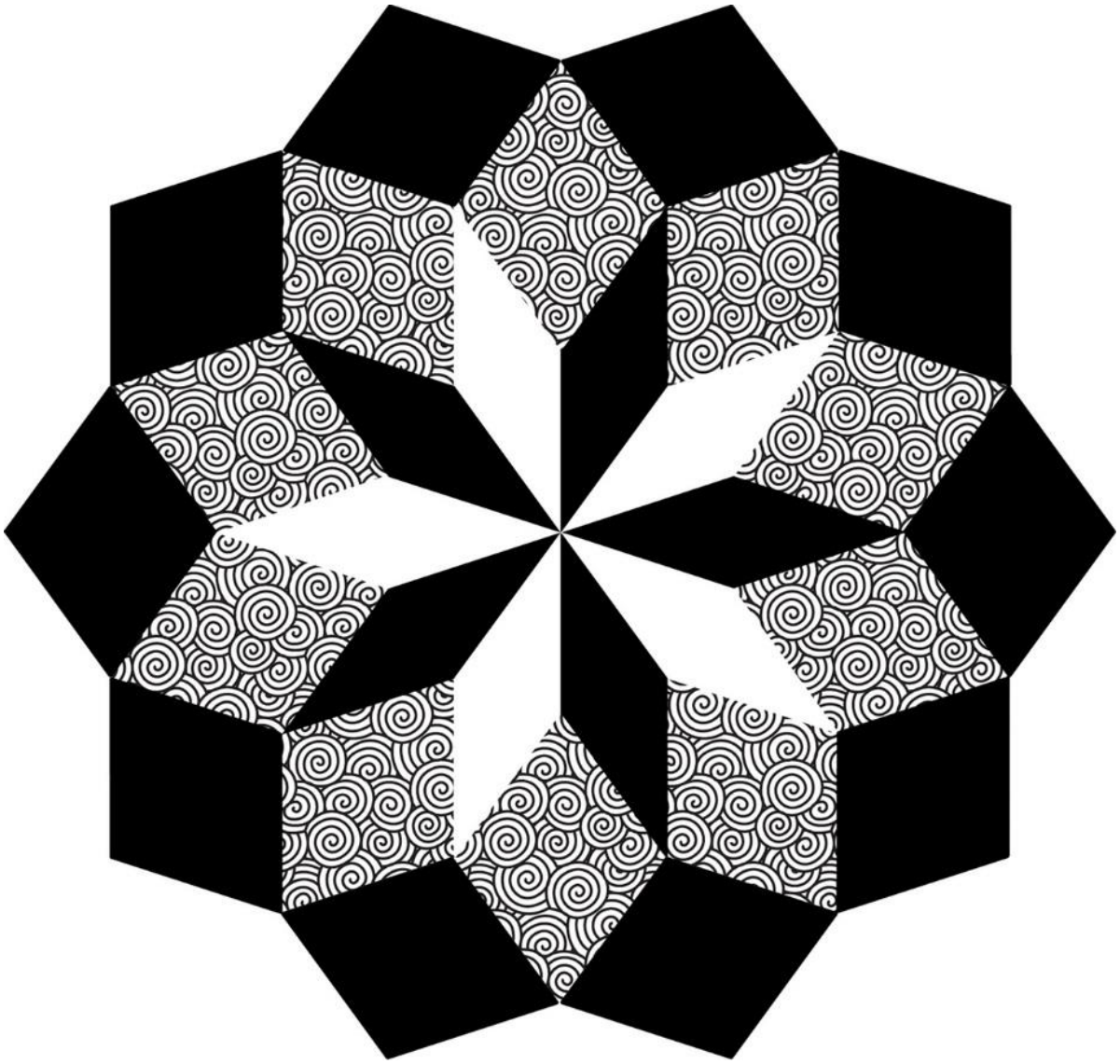
Teja Krašek je registrirana samostojna ustvarjalka na področju kulture, ki živi in dela v Ljubljani. Diplomirala je na Šoli za risanje in slikanje – Visoki strokovni šoli v Ljubljani (Arthouse–College of Visual Arts, Ljubljana) .

Avtoričino raziskovalno in ustvarjalno delo je usmerjeno v povezovanje umetnosti, znanosti, matematike in tehnologije. Pri svojem ustvarjanju uporablja klasične slikarske tehnike kot tudi sodobno računalniško tehnologijo.



‘Quasicube V’, 1997.

Njeno teoretično in praktično delo je osredotočeno na simetrijo kot povezovalni koncept med umetnostjo in znanostjo, na tlakovanje ravnine z geometrijskimi oblikami, posebno tistimi, ki sestavljajo Penrosove vzorce (rombi, zmaji in puščice).



“Rosette for Martin (Gardner)’, 2012.

Tako ustvarjena likovna dela ponazarjajo določene lastnosti kot npr. razmerje zlatega reza, samopodobnost, petštevno simetrijo, Fibonaccijevo zaporedje, zaznavno nestabilnost itd.

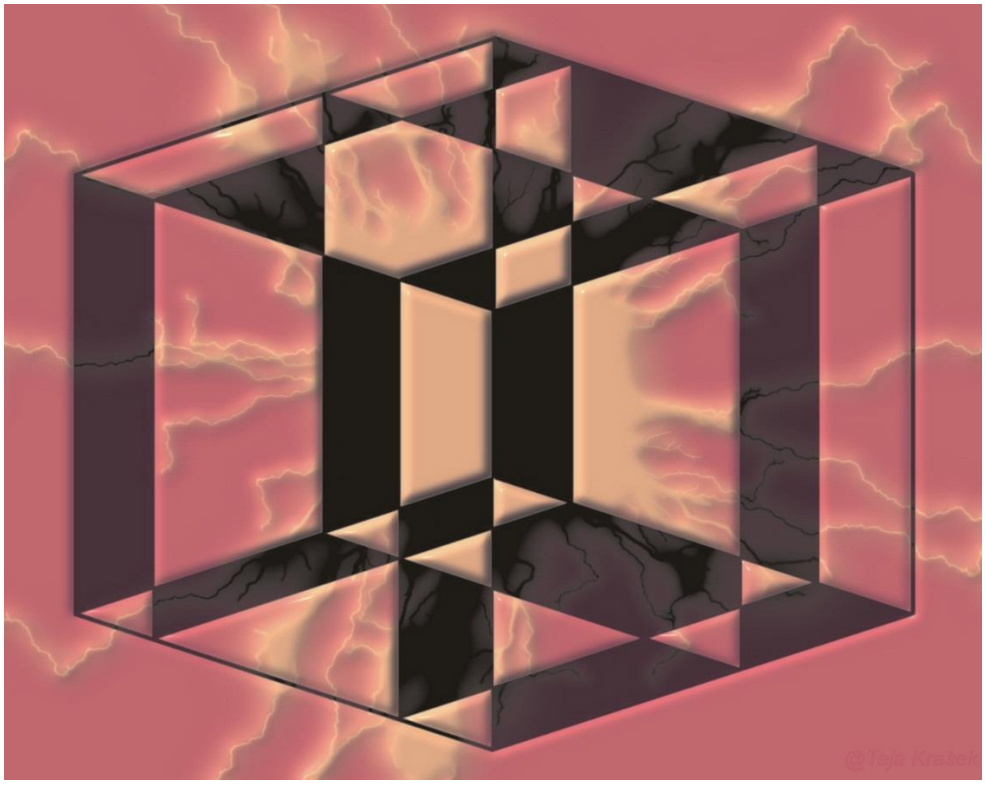


‘2,3,5...’,1999.

Likovno delo med drugim ilustrira prisotnost zlatega reza in Fibonaccijevega zaporedja v Penrosovih tlakovanjih P3 in v Penrosovih rombih (širok in ozek), ki sta sicer sestavna dela pravilnega petkotnika.
Zaznavno nestabilne kompozicije, optične iluzije. so prav tako eno od področij raziskovanja in likovnega ustvarjanja Teje Krašek.



'10/2',1999.



‘Life, The Universe, And Everything’, 2007.

Avtoričino delo vključuje tudi raziskovanje neizmerno bogatega, čudovitega in neskončnega sveta fraktalov ter samopodobnost, ki je njihova značilna lastnost.



‘On The Shore II’, 2021.

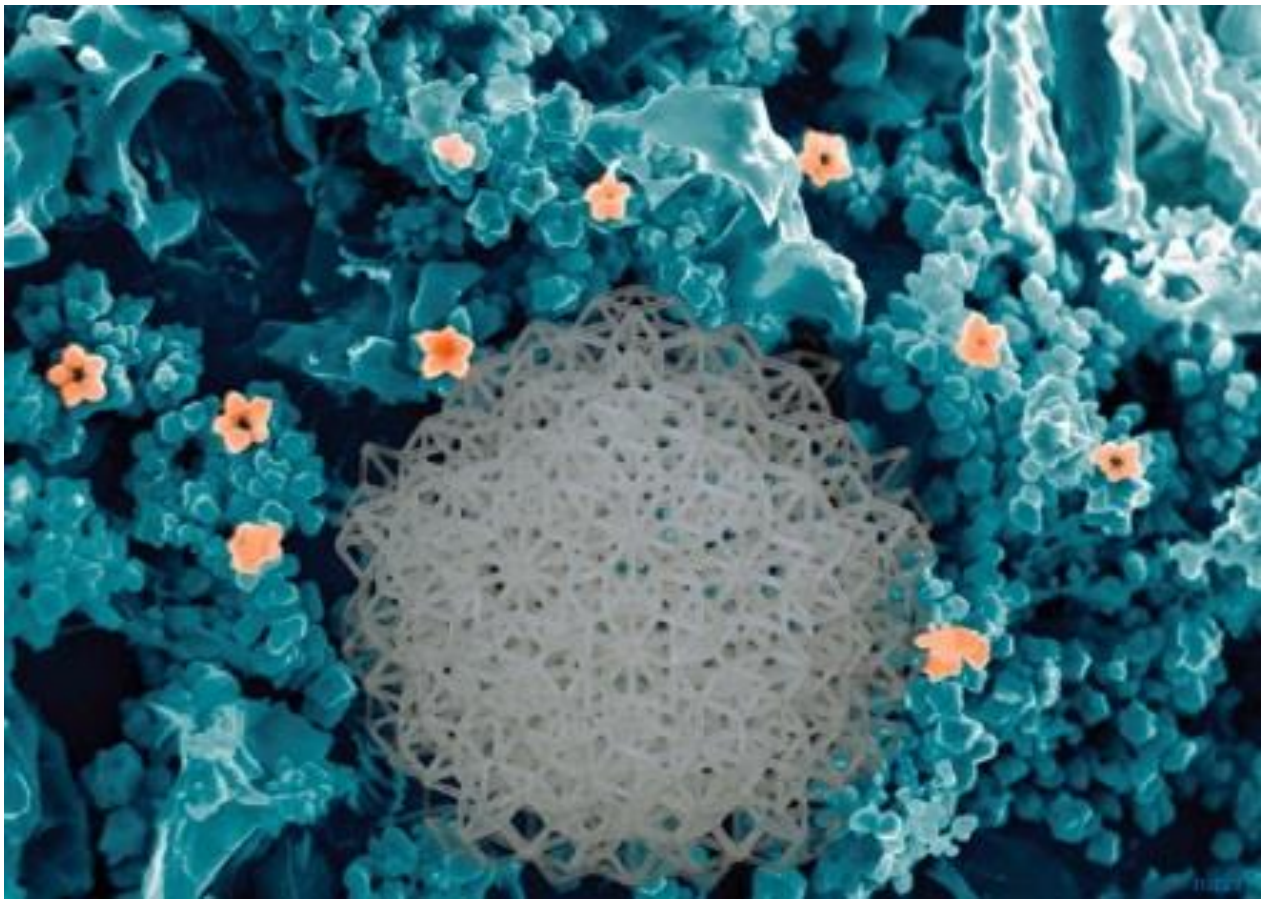
Ameriški tehnološki velikan IBM je ob stoti obletnici ustanovitve uvrstill avtoričin video s fraktalno glasbo matematika Harlana J. Brothersa na svojo spletno stran IBM100: Icons of Progress - Fractal Geometry: Cultural Impacts.



Posnetek zaslona spletne strani IBM100: Icons of Progress.
https://www.ibm.com/ibm/history/ibm100/us/en/icons/fractal/impacts/

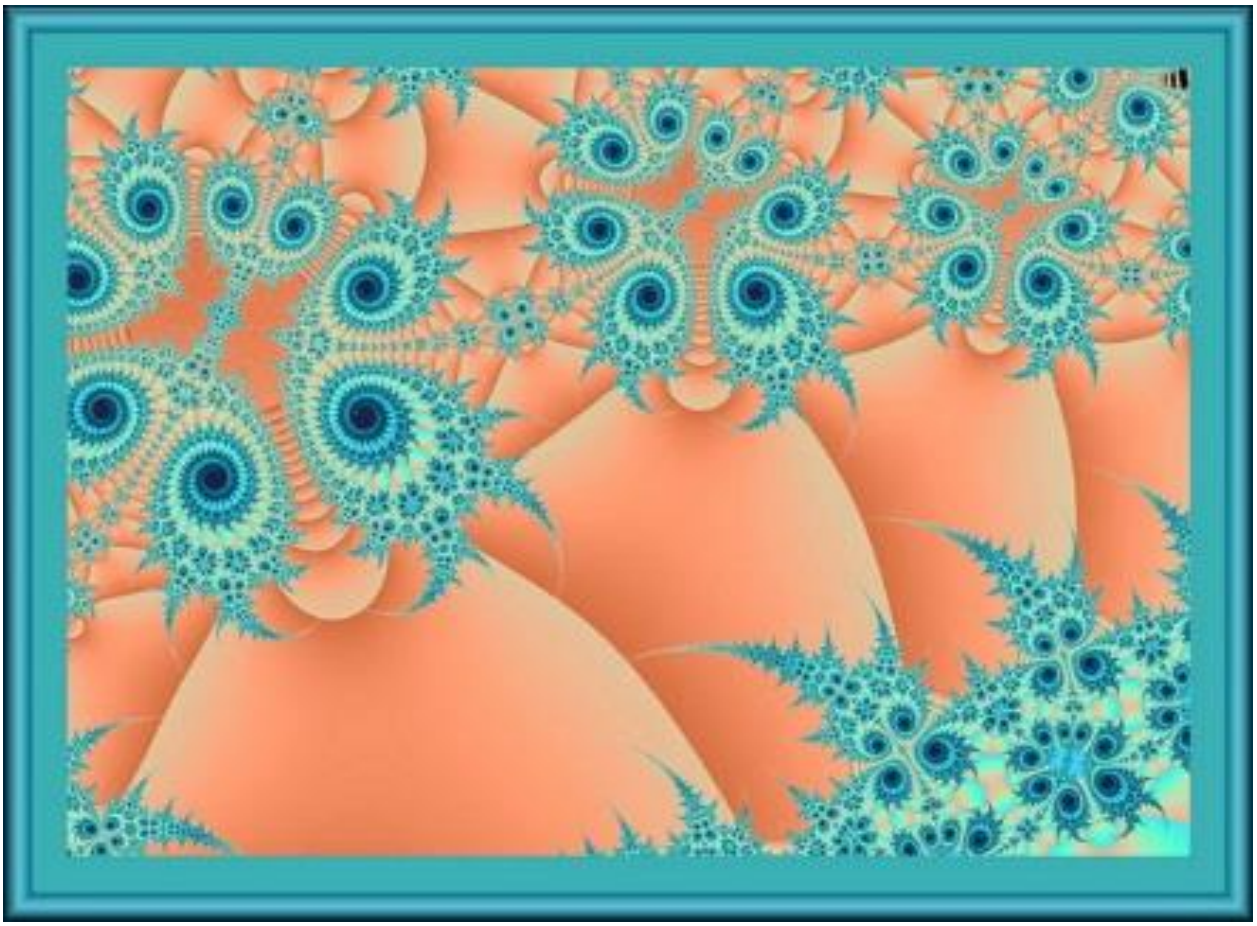
Likovna dela in članki Teje Krašek so razstavljana in objavljena v mednarodnem prostoru (MIT Press, Springer, National Geographic, Portland Press, Sterling, Wall Street Journal, World Scientific…). Omenimo le nekaj knjig - Four Lives: A Celebration of Raymond Smullyan (avtorja J. Rosenhouse in R. Smullyan), Matilde Marcolli: Lumen Naturae: Visions of the Abstract in Art and Mathematics, Jay Kappraff: A Participatory Approach to Modern Geometry, Cliff Pickover: The Math Book, Priya Hemenway: Divine Proportion: Phi In Art, Nature, and Science.

Avtoričina nanoart dela so uvrščena med zmagovalna dela 2., 3., 4., 5., 6. in 7. Mednarodnega spletnega NanoArt tekmovanja (International Online NanoArt Competition).



‘Quasicrystal Blossoms’. 2011.

Dve avtoričini nanoart deli (nastali v sodelovanju z dr. Janezom Dolinškom, dr. Paulom Steinhardtom in dr. An Pang Tsaijem) sta bili izbrani med dela 250 svetovnih ustvarjalcev, ki bodo poslana na razstavo na Mesec in tam za vedno ostala ter predstavljala zemeljsko kulturno dediščino (izjemen projekt MoonArk Univerze Carnegie Mellon v ZDA).



'Happy Fractal Creatures', 2015.

Spletna stran Teje Krašek: https://tejakrasekart.blogspot.com/. Avtoričini originalni, poučno-zabavni kratki video projekti so na ogled na spletni strani https://www.youtube.com/user/tejaK/videos .

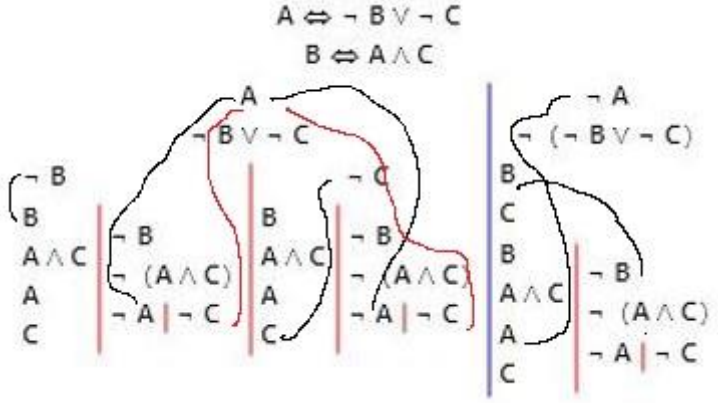
Logične naloge z enolično rešitvijo

Spodaj je seznam logičnih nalog z enolično rešitvijo, ki je podana desno od naloge. Prva naloga v simbolih predstavlja vprašanje na otoku vitezov in oprod kjer domačin A reče, da sta B in C oprodi, B pa pravi, da je A vitez in C oproda. Rešitev je A in B sta oprodi, C je vitez. V drugem delu so podana semantična drevesa za nekatere naloge. Prepričati se moramo, da vse odprte veje dajo isto rešitev.

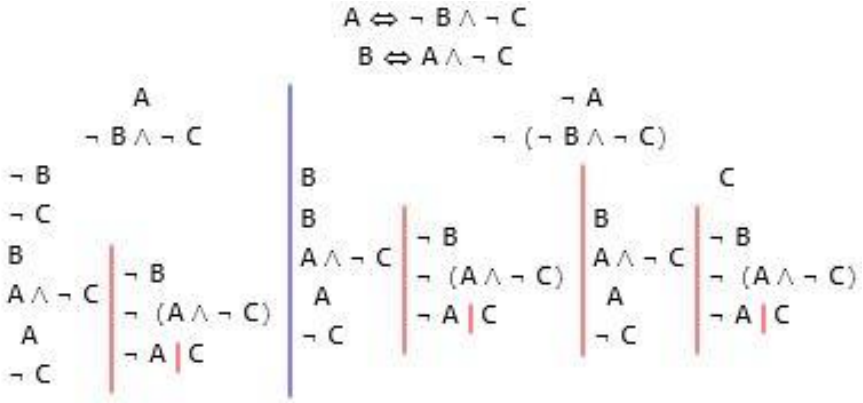
1. $(A \Leftrightarrow \neg B \wedge \neg C) \wedge (B \Leftrightarrow A \wedge \neg C), \neg A \wedge \neg B \wedge C$
2. $(A \Leftrightarrow \neg B \wedge \neg C) \wedge (B \Leftrightarrow \neg C \wedge A), \neg A \wedge \neg B \wedge C$
3. $(A \Leftrightarrow \neg B \wedge C) \wedge (B \Leftrightarrow A \wedge C), \neg A \wedge \neg B \wedge \neg C$
4. $(A \Leftrightarrow \neg B \wedge C) \wedge (B \Leftrightarrow C \wedge A), \neg A \wedge \neg B \wedge \neg C$
5. $(A \Leftrightarrow B \wedge \neg C) \wedge (B \Leftrightarrow \neg A \wedge \neg C), \neg A \wedge \neg B \wedge C$
6. $(A \Leftrightarrow B \wedge \neg C) \wedge (B \Leftrightarrow \neg C \wedge \neg A), \neg A \wedge \neg B \wedge C$
7. $(A \Leftrightarrow B \wedge C) \wedge (B \Leftrightarrow \neg A \wedge C), \neg A \wedge \neg B \wedge \neg C$
8. $(A \Leftrightarrow B \wedge C) \wedge (B \Leftrightarrow C \wedge \neg A), \neg A \wedge \neg B \wedge \neg C$
9. $(A \Leftrightarrow \neg C \wedge \neg B) \wedge (B \Leftrightarrow A \wedge \neg C), \neg A \wedge \neg B \wedge C$
10. $(A \Leftrightarrow \neg C \wedge \neg B) \wedge (B \Leftrightarrow \neg C \wedge A), \neg A \wedge \neg B \wedge C$
11. $(A \Leftrightarrow \neg C \wedge B) \wedge (B \Leftrightarrow \neg A \wedge \neg C), \neg A \wedge \neg B \wedge C$
12. $(A \Leftrightarrow \neg C \wedge B) \wedge (B \Leftrightarrow \neg C \wedge \neg A), \neg A \wedge \neg B \wedge C$
13. $(A \Leftrightarrow C \wedge \neg B) \wedge (B \Leftrightarrow A \wedge C), \neg A \wedge \neg B \wedge \neg C$
14. $(A \Leftrightarrow C \wedge \neg B) \wedge (B \Leftrightarrow C \wedge A), \neg A \wedge \neg B \wedge \neg C$
15. $(A \Leftrightarrow C \wedge B) \wedge (B \Leftrightarrow \neg A \wedge C), \neg A \wedge \neg B \wedge \neg C$
16. $(A \Leftrightarrow C \wedge B) \wedge (B \Leftrightarrow C \wedge \neg A), \neg A \wedge \neg B \wedge \neg C$
17. $(A \Leftrightarrow \neg B \wedge \neg C) \wedge (B \Leftrightarrow A \vee C), \neg A \wedge B \wedge C$
18. $(A \Leftrightarrow \neg B \wedge \neg C) \wedge (B \Leftrightarrow C \vee A), \neg A \wedge B \wedge C$
19. $(A \Leftrightarrow \neg B \wedge C) \wedge (B \Leftrightarrow A \vee \neg C), \neg A \wedge B \wedge \neg C$
20. $(A \Leftrightarrow \neg B \wedge C) \wedge (B \Leftrightarrow \neg C \vee A), \neg A \wedge B \wedge \neg C$
21. $(A \Leftrightarrow B \wedge \neg C) \wedge (B \Leftrightarrow \neg A \vee C), \neg A \wedge B \wedge C$
22. $(A \Leftrightarrow B \wedge \neg C) \wedge (B \Leftrightarrow C \vee \neg A), \neg A \wedge B \wedge C$
23. $(A \Leftrightarrow B \wedge C) \wedge (B \Leftrightarrow \neg A \vee \neg C), \neg A \wedge B \wedge \neg C$
24. $(A \Leftrightarrow B \wedge C) \wedge (B \Leftrightarrow \neg C \vee \neg A), \neg A \wedge B \wedge \neg C$
25. $(A \Leftrightarrow \neg C \wedge \neg B) \wedge (B \Leftrightarrow A \vee C), \neg A \wedge B \wedge C$
26. $(A \Leftrightarrow \neg C \wedge \neg B) \wedge (B \Leftrightarrow C \vee A), \neg A \wedge B \wedge C$
27. $(A \Leftrightarrow \neg C \wedge B) \wedge (B \Leftrightarrow \neg A \vee C), \neg A \wedge B \wedge C$
28. $(A \Leftrightarrow \neg C \wedge B) \wedge (B \Leftrightarrow C \vee \neg A), \neg A \wedge B \wedge C$
29. $(A \Leftrightarrow C \wedge \neg B) \wedge (B \Leftrightarrow A \vee \neg C), \neg A \wedge B \wedge \neg C$
30. $(A \Leftrightarrow C \wedge \neg B) \wedge (B \Leftrightarrow \neg C \vee A), \neg A \wedge B \wedge \neg C$
31. $(A \Leftrightarrow C \wedge B) \wedge (B \Leftrightarrow \neg A \vee \neg C), \neg A \wedge B \wedge \neg C$
32. $(A \Leftrightarrow C \wedge B) \wedge (B \Leftrightarrow \neg C \vee \neg A), \neg A \wedge B \wedge \neg C$
33. $(A \Leftrightarrow \neg B \wedge \neg C) \wedge (B \Leftrightarrow (\neg A \Rightarrow C)), \neg A \wedge B \wedge C$
34. $(A \Leftrightarrow \neg B \wedge \neg C) \wedge (B \Leftrightarrow (\neg C \Rightarrow A)), \neg A \wedge B \wedge C$
35. $(A \Leftrightarrow \neg B \wedge C) \wedge (B \Leftrightarrow (\neg A \Rightarrow \neg C)), \neg A \wedge B \wedge \neg C$
36. $(A \Leftrightarrow \neg B \wedge C) \wedge (B \Leftrightarrow (C \Rightarrow A)), \neg A \wedge B \wedge \neg C$
37. $(A \Leftrightarrow B \wedge \neg C) \wedge (B \Leftrightarrow (A \Rightarrow C)), \neg A \wedge B \wedge C$
38. $(A \Leftrightarrow B \wedge \neg C) \wedge (B \Leftrightarrow (\neg C \Rightarrow \neg A)), \neg A \wedge B \wedge C$
39. $(A \Leftrightarrow B \wedge C) \wedge (B \Leftrightarrow (A \Rightarrow \neg C)), \neg A \wedge B \wedge \neg C$
40. $(A \Leftrightarrow B \wedge C) \wedge (B \Leftrightarrow (C \Rightarrow \neg A)), \neg A \wedge B \wedge \neg C$
41. $(A \Leftrightarrow \neg C \wedge \neg B) \wedge (B \Leftrightarrow (\neg A \Rightarrow C)), \neg A \wedge B \wedge C$
42. $(A \Leftrightarrow \neg C \wedge \neg B) \wedge (B \Leftrightarrow (\neg C \Rightarrow A)), \neg A \wedge B \wedge C$
43. $(A \Leftrightarrow \neg C \wedge B) \wedge (B \Leftrightarrow (A \Rightarrow C)), \neg A \wedge B \wedge C$
44. $(A \Leftrightarrow \neg C \wedge B) \wedge (B \Leftrightarrow (\neg C \Rightarrow \neg A)), \neg A \wedge B \wedge C$
45. $(A \Leftrightarrow C \wedge \neg B) \wedge (B \Leftrightarrow (\neg A \Rightarrow \neg C)), \neg A \wedge B \wedge \neg C$
46. $(A \Leftrightarrow C \wedge \neg B) \wedge (B \Leftrightarrow (C \Rightarrow A)), \neg A \wedge B \wedge \neg C$
47. $(A \Leftrightarrow C \wedge B) \wedge (B \Leftrightarrow (A \Rightarrow \neg C)), \neg A \wedge B \wedge \neg C$
48. $(A \Leftrightarrow C \wedge B) \wedge (B \Leftrightarrow (C \Rightarrow \neg A)), \neg A \wedge B \wedge \neg C$
49. $(A \Leftrightarrow \neg B \vee \neg C) \wedge (B \Leftrightarrow A \wedge C), A \wedge \neg B \wedge \neg C$
50. $(A \Leftrightarrow \neg B \vee \neg C) \wedge (B \Leftrightarrow C \wedge A), A \wedge \neg B \wedge \neg C$
51. $(A \Leftrightarrow \neg B \vee C) \wedge (B \Leftrightarrow A \wedge \neg C), A \wedge \neg B \wedge C$
52. $(A \Leftrightarrow \neg B \vee C) \wedge (B \Leftrightarrow \neg C \wedge A), A \wedge \neg B \wedge C$
53. $(A \Leftrightarrow B \vee \neg C) \wedge (B \Leftrightarrow \neg A \wedge C), A \wedge \neg B \wedge \neg C$
54. $(A \Leftrightarrow B \vee \neg C) \wedge (B \Leftrightarrow C \wedge \neg A), A \wedge \neg B \wedge \neg C$
55. $(A \Leftrightarrow B \vee C) \wedge (B \Leftrightarrow \neg A \wedge \neg C), A \wedge \neg B \wedge C$
56. $(A \Leftrightarrow B \vee C) \wedge (B \Leftrightarrow \neg C \wedge \neg A), A \wedge \neg B \wedge C$
57. $(A \Leftrightarrow \neg C \vee \neg B) \wedge (B \Leftrightarrow A \wedge C), A \wedge \neg B \wedge \neg C$
58. $(A \Leftrightarrow \neg C \vee \neg B) \wedge (B \Leftrightarrow C \wedge A), A \wedge \neg B \wedge \neg C$
59. $(A \Leftrightarrow \neg C \vee B) \wedge (B \Leftrightarrow \neg A \wedge C), A \wedge \neg B \wedge \neg C$
60. $(A \Leftrightarrow \neg C \vee B) \wedge (B \Leftrightarrow C \wedge \neg A), A \wedge \neg B \wedge \neg C$
61. $(A \Leftrightarrow C \vee \neg B) \wedge (B \Leftrightarrow A \wedge \neg C), A \wedge \neg B \wedge C$
62. $(A \Leftrightarrow C \vee \neg B) \wedge (B \Leftrightarrow \neg C \wedge A), A \wedge \neg B \wedge C$
63. $(A \Leftrightarrow C \vee B) \wedge (B \Leftrightarrow \neg A \wedge \neg C), A \wedge \neg B \wedge C$
64. $(A \Leftrightarrow C \vee B) \wedge (B \Leftrightarrow \neg C \wedge \neg A), A \wedge \neg B \wedge C$
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66. $(A \Leftrightarrow \neg B \vee \neg C) \wedge (B \Leftrightarrow \neg C \vee A), A \wedge B \wedge \neg C$
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72. $(A \Leftrightarrow B \vee C) \wedge (B \Leftrightarrow C \vee \neg A), A \wedge B \wedge C$

73. $(A \Leftrightarrow \neg C \vee \neg B) \wedge (B \Leftrightarrow A \vee \neg C), A \wedge B \wedge \neg C$
74. $(A \Leftrightarrow \neg C \vee \neg B) \wedge (B \Leftrightarrow \neg C \vee A), A \wedge B \wedge \neg C$
75. $(A \Leftrightarrow \neg C \vee B) \wedge (B \Leftrightarrow \neg A \vee \neg C), A \wedge B \wedge \neg C$
76. $(A \Leftrightarrow \neg C \vee B) \wedge (B \Leftrightarrow \neg C \vee \neg A), A \wedge B \wedge \neg C$
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78. $(A \Leftrightarrow C \vee \neg B) \wedge (B \Leftrightarrow C \vee A), A \wedge B \wedge C$
79. $(A \Leftrightarrow C \vee B) \wedge (B \Leftrightarrow \neg A \vee C), A \wedge B \wedge C$
80. $(A \Leftrightarrow C \vee B) \wedge (B \Leftrightarrow C \vee \neg A), A \wedge B \wedge C$
81. $(A \Leftrightarrow \neg B \vee \neg C) \wedge (B \Leftrightarrow (\neg A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
82. $(A \Leftrightarrow \neg B \vee \neg C) \wedge (B \Leftrightarrow (C \Rightarrow A)), A \wedge B \wedge \neg C$
83. $(A \Leftrightarrow \neg B \vee C) \wedge (B \Leftrightarrow (\neg A \Rightarrow C)), A \wedge B \wedge C$
84. $(A \Leftrightarrow \neg B \vee C) \wedge (B \Leftrightarrow (\neg C \Rightarrow A)), A \wedge B \wedge C$
85. $(A \Leftrightarrow B \vee \neg C) \wedge (B \Leftrightarrow (A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
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87. $(A \Leftrightarrow B \vee C) \wedge (B \Leftrightarrow (A \Rightarrow C)), A \wedge B \wedge C$
88. $(A \Leftrightarrow B \vee C) \wedge (B \Leftrightarrow (\neg C \Rightarrow \neg A)), A \wedge B \wedge C$
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90. $(A \Leftrightarrow \neg C \vee \neg B) \wedge (B \Leftrightarrow (C \Rightarrow A)), A \wedge B \wedge \neg C$
91. $(A \Leftrightarrow \neg C \vee B) \wedge (B \Leftrightarrow (A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
92. $(A \Leftrightarrow \neg C \vee B) \wedge (B \Leftrightarrow (C \Rightarrow \neg A)), A \wedge B \wedge \neg C$
93. $(A \Leftrightarrow C \vee \neg B) \wedge (B \Leftrightarrow (\neg A \Rightarrow C)), A \wedge B \wedge C$
94. $(A \Leftrightarrow C \vee \neg B) \wedge (B \Leftrightarrow (\neg C \Rightarrow A)), A \wedge B \wedge C$
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97. $(A \Leftrightarrow (\neg B \Rightarrow \neg C)) \wedge (B \Leftrightarrow \neg A \wedge C), A \wedge \neg B \wedge \neg C$
98. $(A \Leftrightarrow (\neg B \Rightarrow \neg C)) \wedge (B \Leftrightarrow C \wedge \neg A), A \wedge \neg B \wedge \neg C$
99. $(A \Leftrightarrow (\neg B \Rightarrow C)) \wedge (B \Leftrightarrow \neg A \wedge \neg C), A \wedge \neg B \wedge C$
100. $(A \Leftrightarrow (\neg B \Rightarrow C)) \wedge (B \Leftrightarrow \neg C \wedge \neg A), A \wedge \neg B \wedge C$
101. $(A \Leftrightarrow (B \Rightarrow \neg C)) \wedge (B \Leftrightarrow A \wedge C), A \wedge \neg B \wedge \neg C$
102. $(A \Leftrightarrow (B \Rightarrow \neg C)) \wedge (B \Leftrightarrow C \wedge A), A \wedge \neg B \wedge \neg C$
103. $(A \Leftrightarrow (B \Rightarrow C)) \wedge (B \Leftrightarrow A \wedge \neg C), A \wedge \neg B \wedge C$
104. $(A \Leftrightarrow (B \Rightarrow C)) \wedge (B \Leftrightarrow \neg C \wedge A), A \wedge \neg B \wedge C$
105. $(A \Leftrightarrow (\neg C \Rightarrow \neg B)) \wedge (B \Leftrightarrow A \wedge \neg C), A \wedge \neg B \wedge C$
106. $(A \Leftrightarrow (\neg C \Rightarrow \neg B)) \wedge (B \Leftrightarrow \neg C \wedge A), A \wedge \neg B \wedge C$
107. $(A \Leftrightarrow (\neg C \Rightarrow B)) \wedge (B \Leftrightarrow \neg A \wedge \neg C), A \wedge \neg B \wedge C$
108. $(A \Leftrightarrow (\neg C \Rightarrow B)) \wedge (B \Leftrightarrow \neg C \wedge \neg A), A \wedge \neg B \wedge C$
109. $(A \Leftrightarrow (C \Rightarrow \neg B)) \wedge (B \Leftrightarrow A \wedge C), A \wedge \neg B \wedge \neg C$
110. $(A \Leftrightarrow (C \Rightarrow \neg B)) \wedge (B \Leftrightarrow C \wedge A), A \wedge \neg B \wedge \neg C$
111. $(A \Leftrightarrow (C \Rightarrow B)) \wedge (B \Leftrightarrow \neg A \wedge C), A \wedge \neg B \wedge \neg C$
112. $(A \Leftrightarrow (C \Rightarrow B)) \wedge (B \Leftrightarrow C \wedge \neg A), A \wedge \neg B \wedge \neg C$
113. $(A \Leftrightarrow (\neg B \Rightarrow \neg C)) \wedge (B \Leftrightarrow \neg A \vee \neg C), A \wedge B \wedge \neg C$
114. $(A \Leftrightarrow (\neg B \Rightarrow \neg C)) \wedge (B \Leftrightarrow \neg C \vee \neg A), A \wedge B \wedge \neg C$
115. $(A \Leftrightarrow (\neg B \Rightarrow C)) \wedge (B \Leftrightarrow \neg A \vee C), A \wedge B \wedge C$
116. $(A \Leftrightarrow (\neg B \Rightarrow C)) \wedge (B \Leftrightarrow C \vee \neg A), A \wedge B \wedge C$
117. $(A \Leftrightarrow (B \Rightarrow \neg C)) \wedge (B \Leftrightarrow A \vee \neg C), A \wedge B \wedge \neg C$
118. $(A \Leftrightarrow (B \Rightarrow \neg C)) \wedge (B \Leftrightarrow \neg C \vee A), A \wedge B \wedge \neg C$
119. $(A \Leftrightarrow (B \Rightarrow C)) \wedge (B \Leftrightarrow A \vee C), A \wedge B \wedge C$
120. $(A \Leftrightarrow (B \Rightarrow C)) \wedge (B \Leftrightarrow C \vee A), A \wedge B \wedge C$
121. $(A \Leftrightarrow (\neg C \Rightarrow \neg B)) \wedge (B \Leftrightarrow A \vee C), A \wedge B \wedge C$
122. $(A \Leftrightarrow (\neg C \Rightarrow \neg B)) \wedge (B \Leftrightarrow C \vee A), A \wedge B \wedge C$
123. $(A \Leftrightarrow (\neg C \Rightarrow B)) \wedge (B \Leftrightarrow \neg A \vee C), A \wedge B \wedge C$
124. $(A \Leftrightarrow (\neg C \Rightarrow B)) \wedge (B \Leftrightarrow C \vee \neg A), A \wedge B \wedge C$
125. $(A \Leftrightarrow (C \Rightarrow \neg B)) \wedge (B \Leftrightarrow A \vee \neg C), A \wedge B \wedge \neg C$
126. $(A \Leftrightarrow (C \Rightarrow \neg B)) \wedge (B \Leftrightarrow \neg C \vee A), A \wedge B \wedge \neg C$
127. $(A \Leftrightarrow (C \Rightarrow B)) \wedge (B \Leftrightarrow \neg A \vee \neg C), A \wedge B \wedge \neg C$
128. $(A \Leftrightarrow (C \Rightarrow B)) \wedge (B \Leftrightarrow \neg C \vee \neg A), A \wedge B \wedge \neg C$
129. $(A \Leftrightarrow (\neg B \Rightarrow \neg C)) \wedge (B \Leftrightarrow (A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
130. $(A \Leftrightarrow (\neg B \Rightarrow \neg C)) \wedge (B \Leftrightarrow (C \Rightarrow \neg A)), A \wedge B \wedge \neg C$
131. $(A \Leftrightarrow (\neg B \Rightarrow C)) \wedge (B \Leftrightarrow (A \Rightarrow C)), A \wedge B \wedge C$
132. $(A \Leftrightarrow (\neg B \Rightarrow C)) \wedge (B \Leftrightarrow (\neg C \Rightarrow \neg A)), A \wedge B \wedge C$
133. $(A \Leftrightarrow (B \Rightarrow \neg C)) \wedge (B \Leftrightarrow (\neg A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
134. $(A \Leftrightarrow (B \Rightarrow \neg C)) \wedge (B \Leftrightarrow (C \Rightarrow A)), A \wedge B \wedge \neg C$
135. $(A \Leftrightarrow (B \Rightarrow C)) \wedge (B \Leftrightarrow (\neg A \Rightarrow C)), A \wedge B \wedge C$
136. $(A \Leftrightarrow (B \Rightarrow C)) \wedge (B \Leftrightarrow (\neg C \Rightarrow A)), A \wedge B \wedge C$
137. $(A \Leftrightarrow (\neg C \Rightarrow \neg B)) \wedge (B \Leftrightarrow (\neg A \Rightarrow C)), A \wedge B \wedge C$
138. $(A \Leftrightarrow (\neg C \Rightarrow \neg B)) \wedge (B \Leftrightarrow (\neg C \Rightarrow A)), A \wedge B \wedge C$
139. $(A \Leftrightarrow (\neg C \Rightarrow B)) \wedge (B \Leftrightarrow (A \Rightarrow C)), A \wedge B \wedge C$
140. $(A \Leftrightarrow (\neg C \Rightarrow B)) \wedge (B \Leftrightarrow (\neg C \Rightarrow \neg A)), A \wedge B \wedge C$
141. $(A \Leftrightarrow (C \Rightarrow \neg B)) \wedge (B \Leftrightarrow (\neg A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
142. $(A \Leftrightarrow (C \Rightarrow \neg B)) \wedge (B \Leftrightarrow (C \Rightarrow A)), A \wedge B \wedge \neg C$
143. $(A \Leftrightarrow (C \Rightarrow B)) \wedge (B \Leftrightarrow (A \Rightarrow \neg C)), A \wedge B \wedge \neg C$
144. $(A \Leftrightarrow (C \Rightarrow B)) \wedge (B \Leftrightarrow (C \Rightarrow \neg A)), A \wedge B \wedge \neg C$

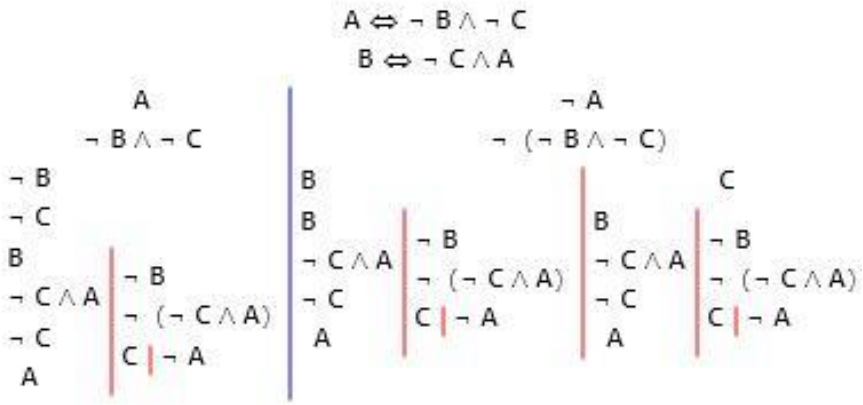
Spodaj je dano semantično drevo za 49. nalogo. Črte povezujejo osnovne izjave in njihove negacije ter tako označujejo zaprto vejo. Na dveh odprtih vejah (rdeči črti) najdemo A, ¬B in ¬C. To je enolična rešitev.



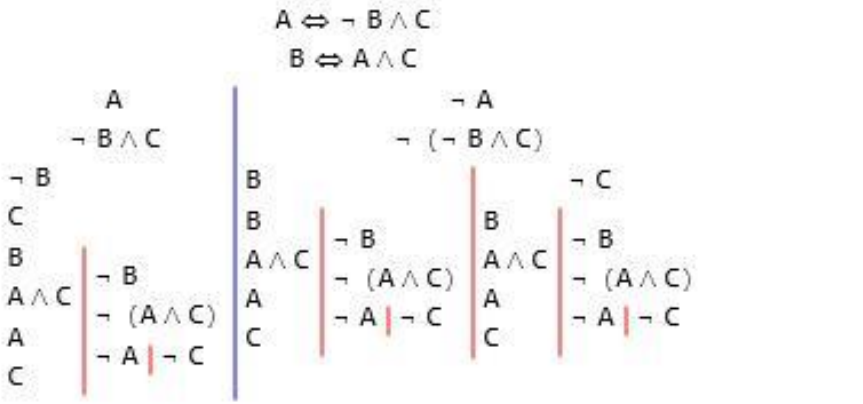
1.


A ⇔ ¬ B ∧ ¬ C
B ⇔ A ∧ ¬ C
A
¬ B ∧ ¬ C
¬ B
¬ C
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
¬ A
¬ (¬ B ∧ ¬ C)
B
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
B
A ∧ ¬ C
A
¬ C
C
¬ B
¬ (A ∧ ¬ C)
¬ A | C

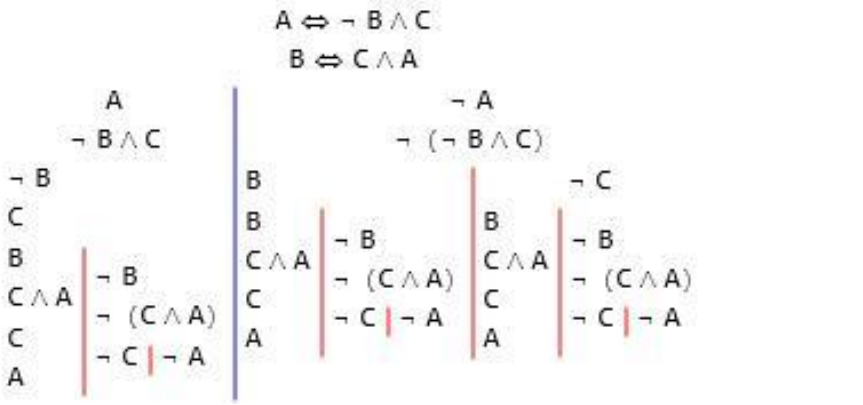
2.


A ⇔ ¬ B ∧ ¬ C
B ⇔ ¬ C ∧ A
A
¬ B ∧ ¬ C
¬ B
¬ C
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
¬ A
¬ (¬ B ∧ ¬ C)
B
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
B
¬ C ∧ A
¬ C
A
C
¬ B
¬ (¬ C ∧ A)
C | ¬ A

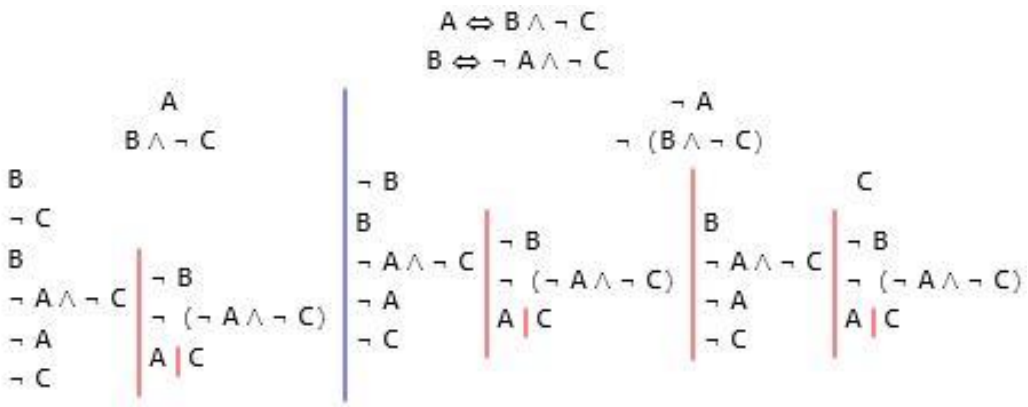
3.


A ⇔ ¬ B ∧ C
B ⇔ A ∧ C
A
¬ B ∧ C
¬ B
C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
¬ A
¬ (¬ B ∧ C)
B
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
¬ C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C

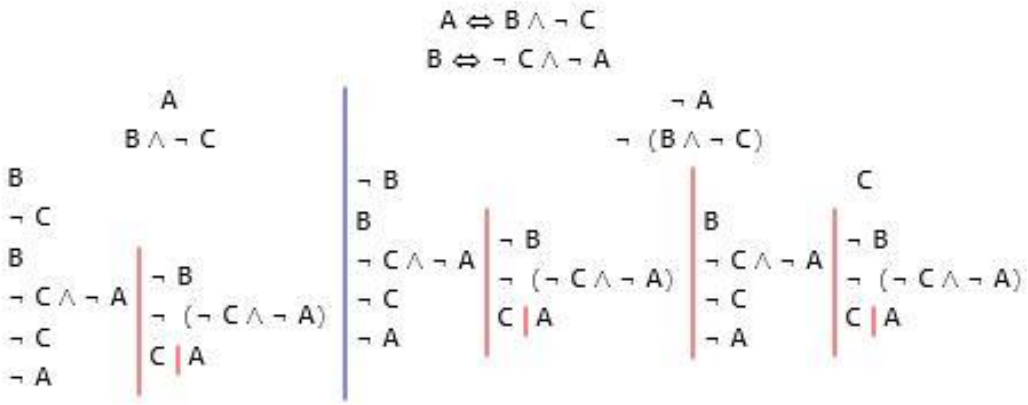
4.


A ⇔ ¬ B ∧ C
B ⇔ C ∧ A
A
¬ B ∧ C
¬ B
C
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
¬ A
¬ (¬ B ∧ C)
B
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
¬ C
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A

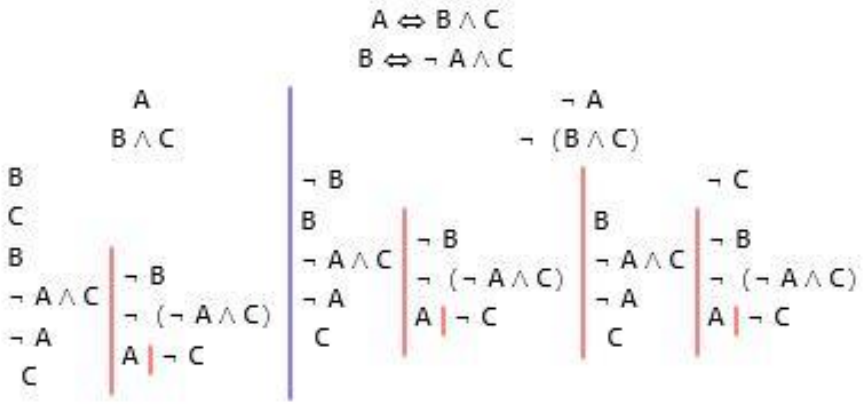
5.


A ⇔ B ∧ ¬ C
B ⇔ ¬ A ∧ ¬ C
A
B ∧ ¬ C
B
¬ C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
¬ B
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
¬ A
¬ (B ∧ ¬ C)
B
¬ A ∧ ¬ C
¬ A
¬ C
C
¬ B
¬ (¬ A ∧ ¬ C)
A | C

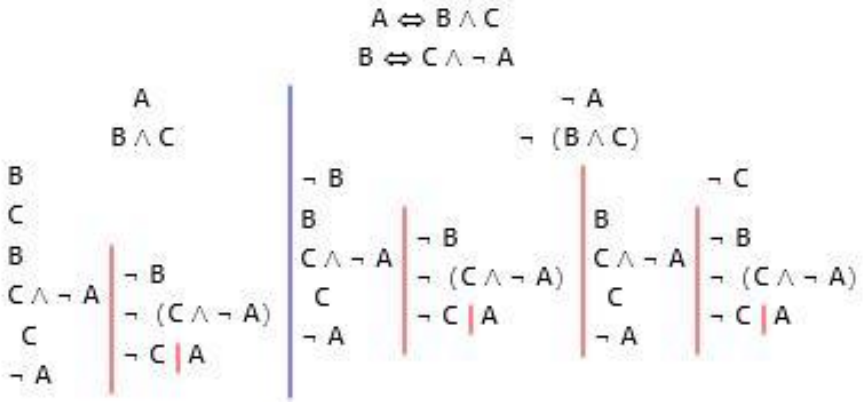
6.


A ⇔ B ∧ ¬ C
B ⇔ ¬ C ∧ ¬ A
A
B ∧ ¬ C
B
¬ C
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
¬ B
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
¬ A
¬ (B ∧ ¬ C)
B
¬ C ∧ ¬ A
¬ C
¬ A
C
¬ B
¬ (¬ C ∧ ¬ A)
C | A

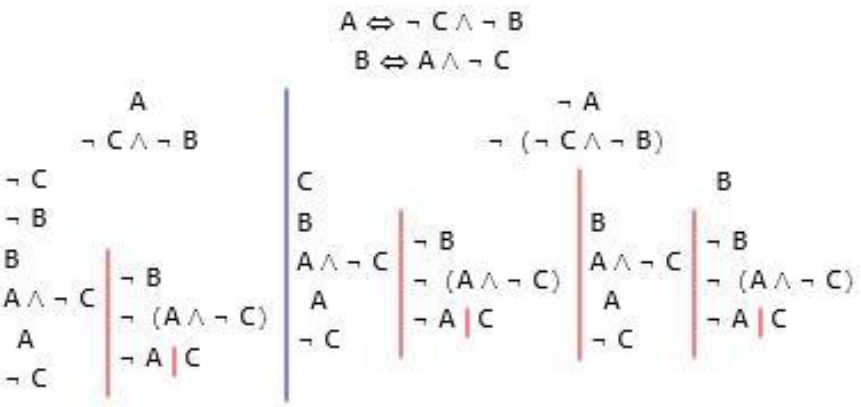
7.


A ⇔ B ∧ C
B ⇔ ¬ A ∧ C
A
B ∧ C
B
C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
¬ B
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
¬ A
¬ (B ∧ C)
B
¬ A ∧ C
¬ A
C
¬ C
¬ B
¬ (¬ A ∧ C)
A | ¬ C

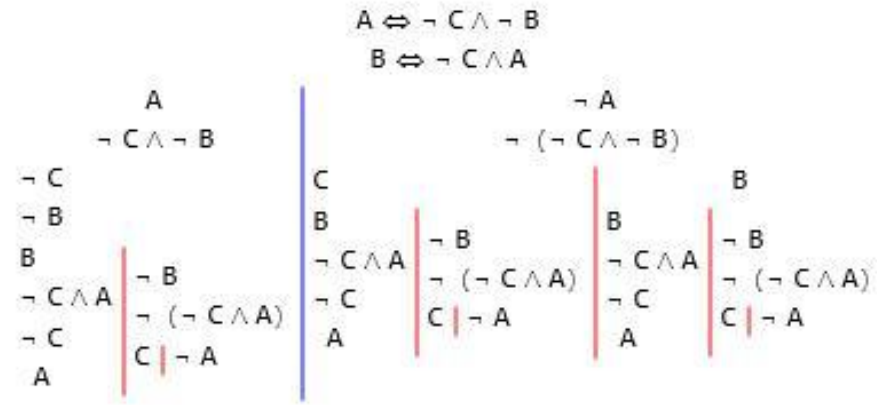
8.


A ⇔ B ∧ C
B ⇔ C ∧ ¬ A
A
B ∧ C
B
C
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
¬ B
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
¬ A
¬ (B ∧ C)
B
C ∧ ¬ A
C
¬ A
¬ C
¬ B
¬ (C ∧ ¬ A)
¬ C | A

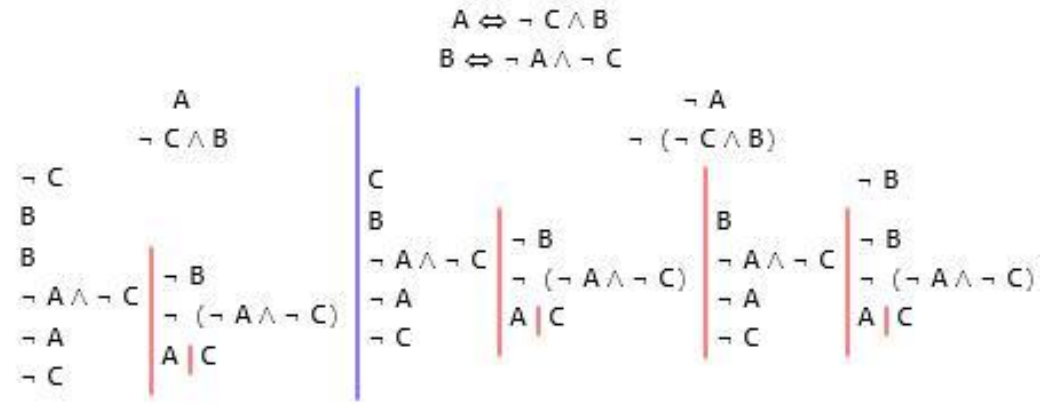
9.


A ⇔ ¬ C ∧ ¬ B
B ⇔ A ∧ ¬ C
A
¬ C ∧ ¬ B
¬ C
¬ B
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
C
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
¬ A
¬ (¬ C ∧ ¬ B)
B
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C

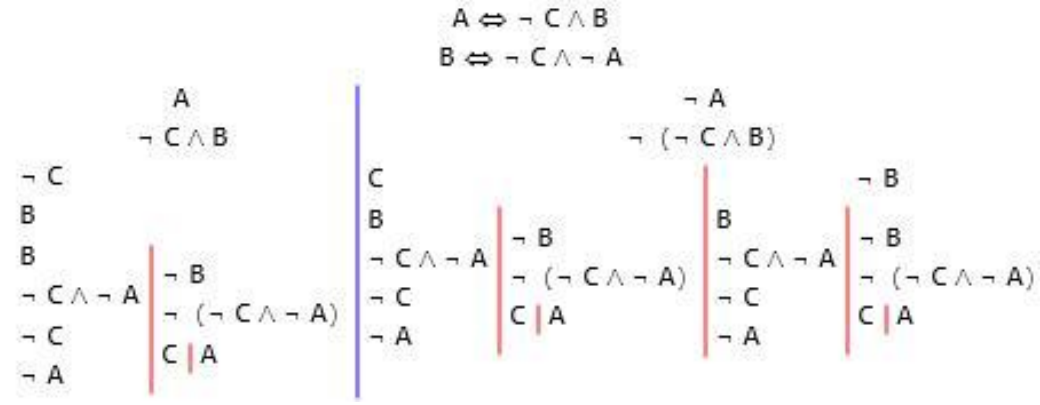
10.


A ⇔ ¬ C ∧ ¬ B
B ⇔ ¬ C ∧ A
A
¬ C ∧ ¬ B
¬ C
¬ B
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
C
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
¬ A
¬ (¬ C ∧ ¬ B)
B
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A

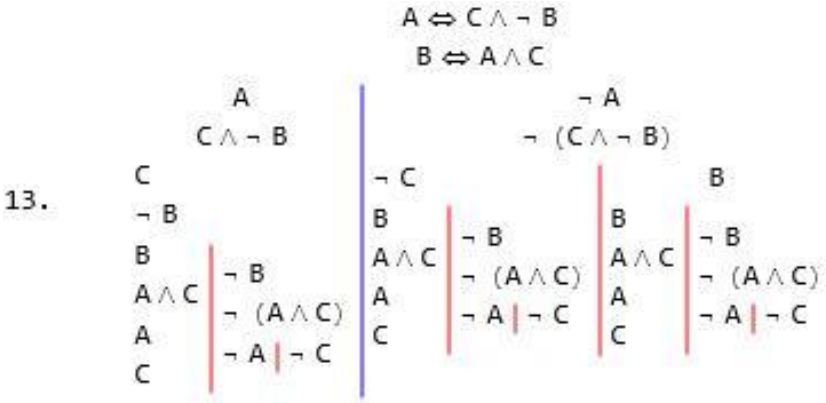
11.


A ⇔ ¬ C ∧ B
B ⇔ ¬ A ∧ ¬ C
A
¬ C ∧ B
¬ C
B
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
¬ A
¬ (¬ C ∧ B)
B
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C

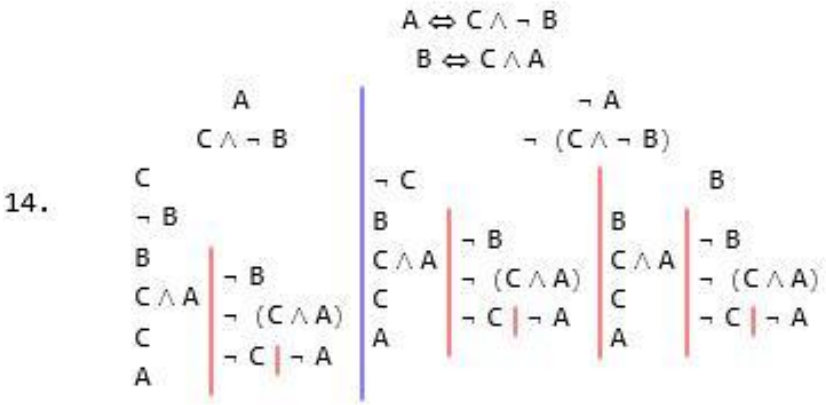
12.


A ⇔ ¬ C ∧ B
B ⇔ ¬ C ∧ ¬ A
A
¬ C ∧ B
¬ C
B
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
C
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
¬ A
¬ (¬ C ∧ B)
B
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A

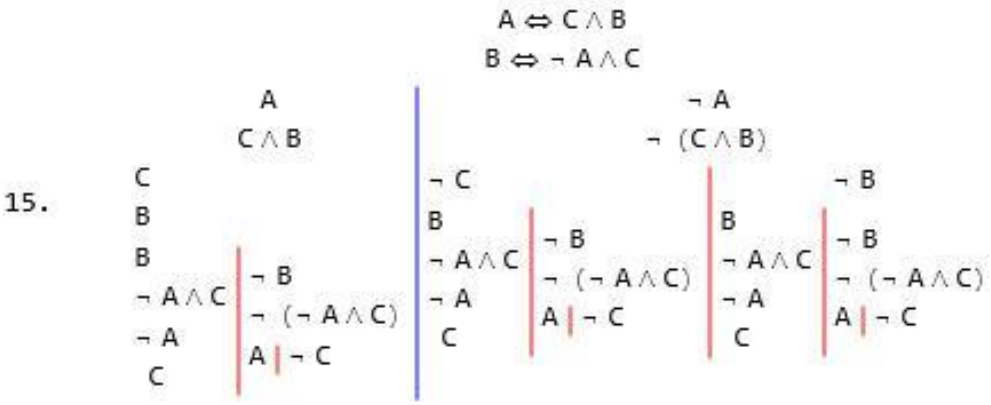
13.


A ⇔ C ∧ ¬ B
B ⇔ A ∧ C
A
C ∧ ¬ B
C
¬ B
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
¬ A
¬ (C ∧ ¬ B)
¬ C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C

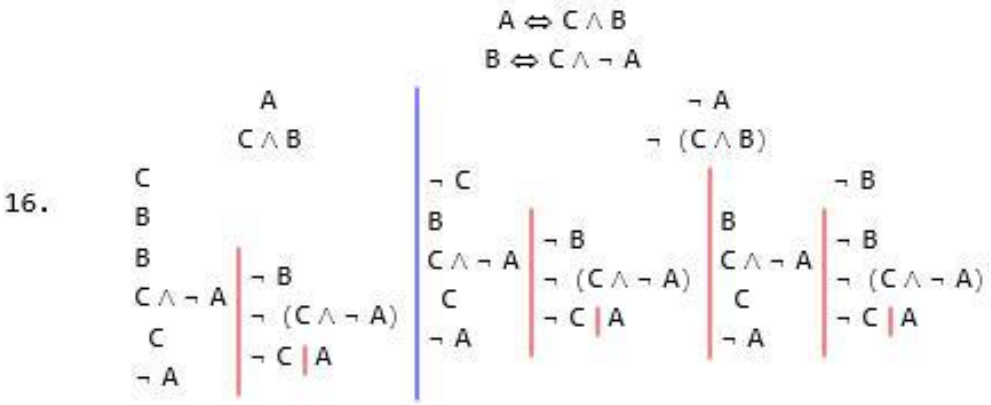
14.


A ⇔ C ∧ ¬ B
B ⇔ C ∧ A
A
C ∧ ¬ B
C
¬ B
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
¬ A
¬ (C ∧ ¬ B)
¬ C
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A

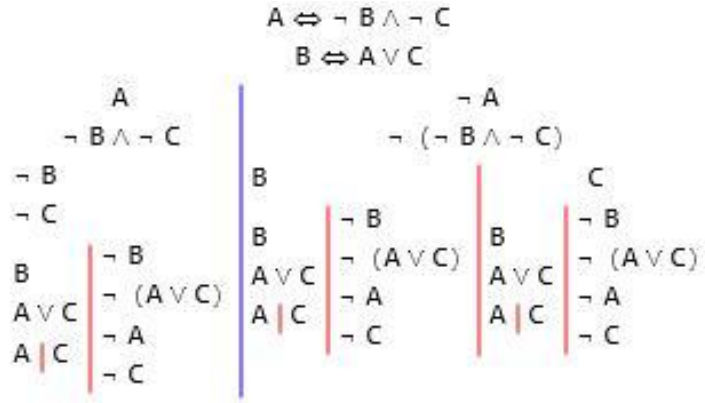
15.


A ⇔ C ∧ B
B ⇔ ¬ A ∧ C
A
C ∧ B
C
B
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
¬ A
¬ (C ∧ B)
¬ C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C

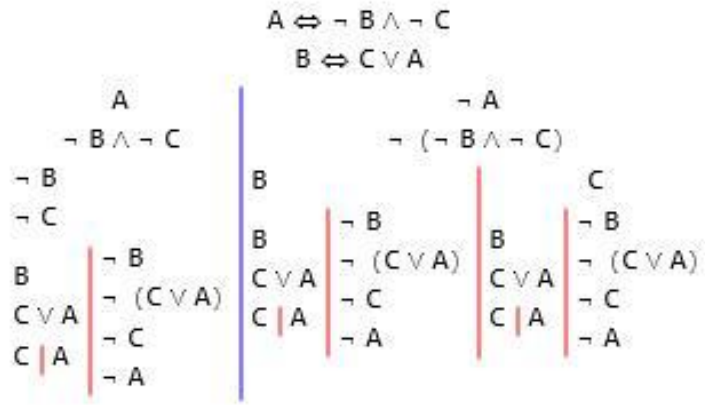
16.


A ⇔ C ∧ B
B ⇔ C ∧ ¬ A
A
C ∧ B
C
B
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
¬ A
¬ (C ∧ B)
¬ C
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A

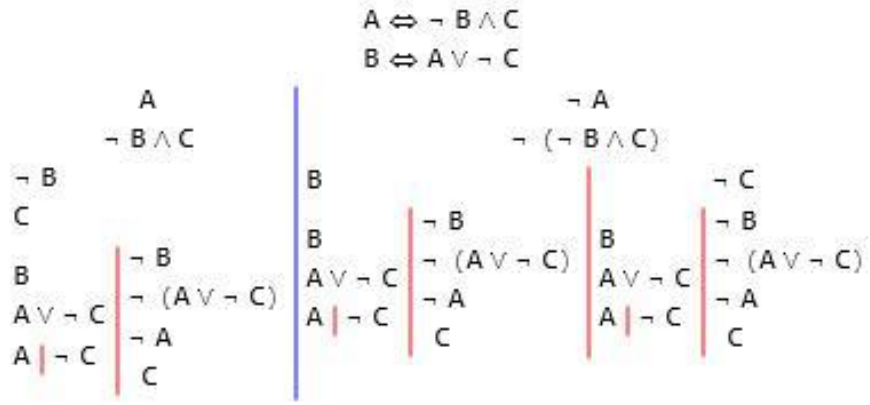
17.


A ⇔ ¬ B ∧ ¬ C
B ⇔ A ∨ C
A
¬ B ∧ ¬ C
¬ B
¬ C
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
¬ A
¬ (¬ B ∧ ¬ C)
B
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
C
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C

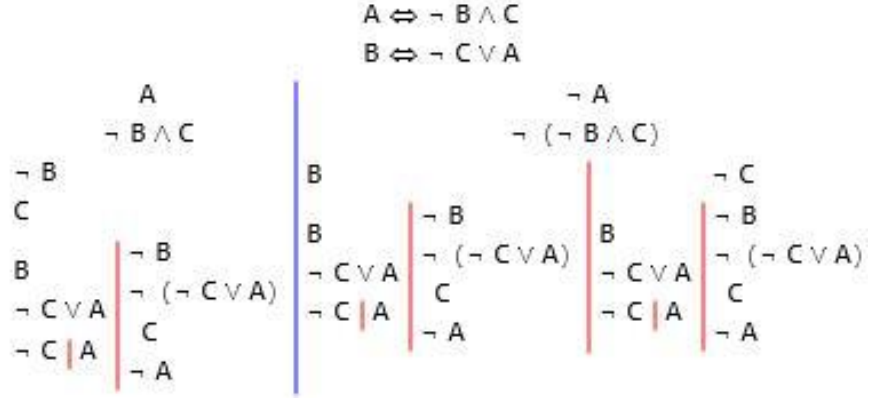
18.


A ⇔ ¬ B ∧ ¬ C
B ⇔ C ∨ A
A
¬ B ∧ ¬ C
¬ B
¬ C
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
¬ A
¬ (¬ B ∧ ¬ C)
B
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
C
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A

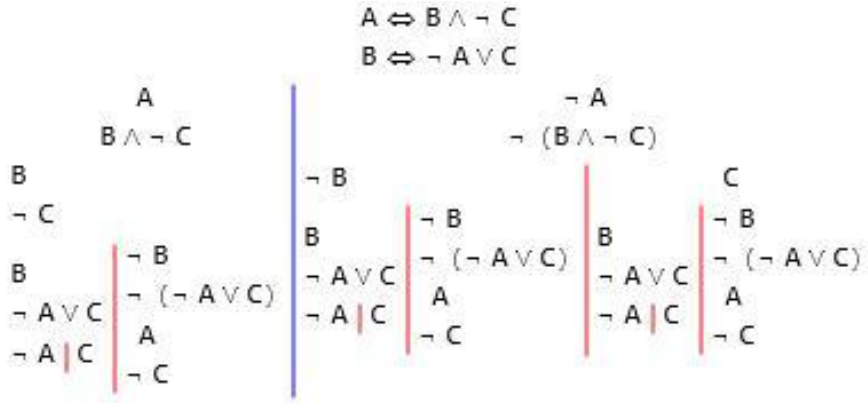
19.


A ⇔ ¬ B ∧ C
B ⇔ A ∨ ¬ C
A
¬ B ∧ C
¬ B
C
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
¬ A
¬ (¬ B ∧ C)
B
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
¬ C
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C

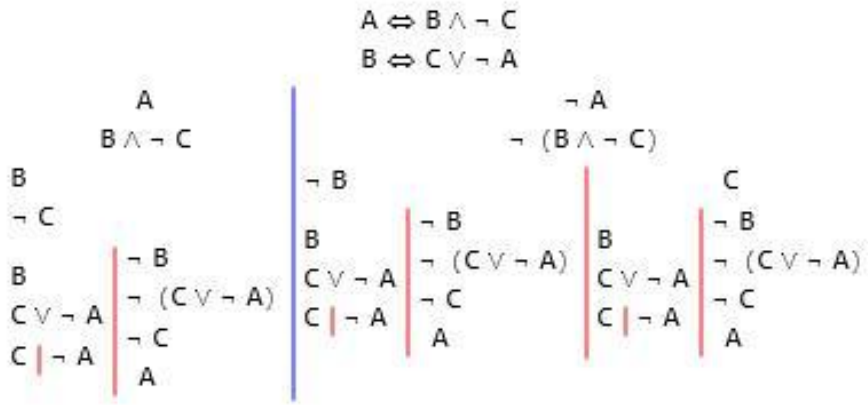
20.


A ⇔ ¬ B ∧ C
B ⇔ ¬ C ∨ A
A
¬ B ∧ C
¬ B
C
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
¬ A
¬ (¬ B ∧ C)
B
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
¬ C
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A

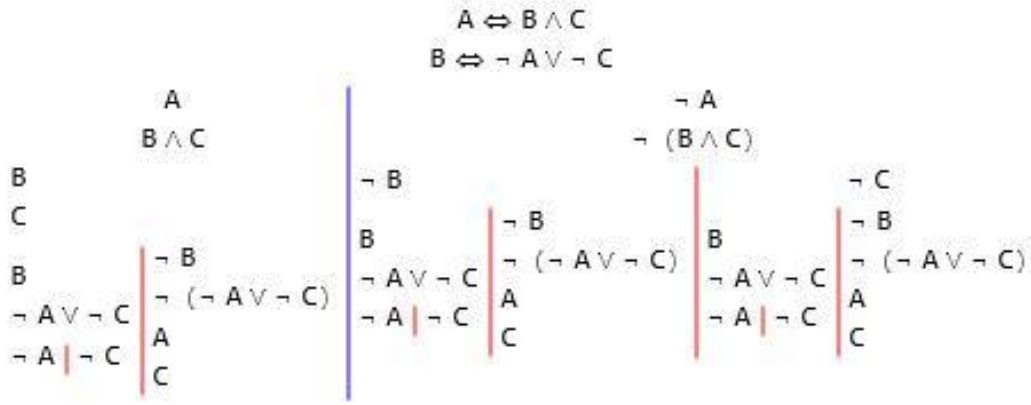
21.


A ⇔ B ∧ ¬ C
B ⇔ ¬ A ∨ C
A
B ∧ ¬ C
B
¬ C
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C
¬ B
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C
¬ A
¬ (B ∧ ¬ C)
C
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C

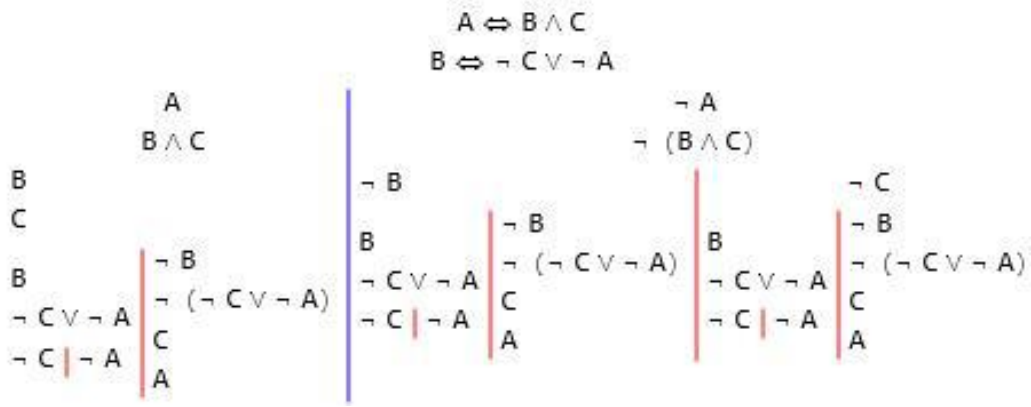
22.


A ⇔ B ∧ ¬ C
B ⇔ C ∨ ¬ A
A
B ∧ ¬ C
B
¬ C
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A
¬ B
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A
¬ A
¬ (B ∧ ¬ C)
C
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A

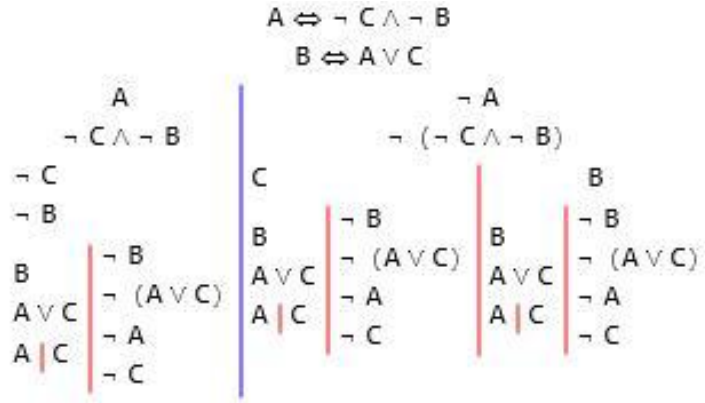
23.


A ⇔ B ∧ C
B ⇔ ¬ A ∨ ¬ C
A
B ∧ C
B
C
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ B
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ A
¬ (B ∧ C)
¬ C
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C

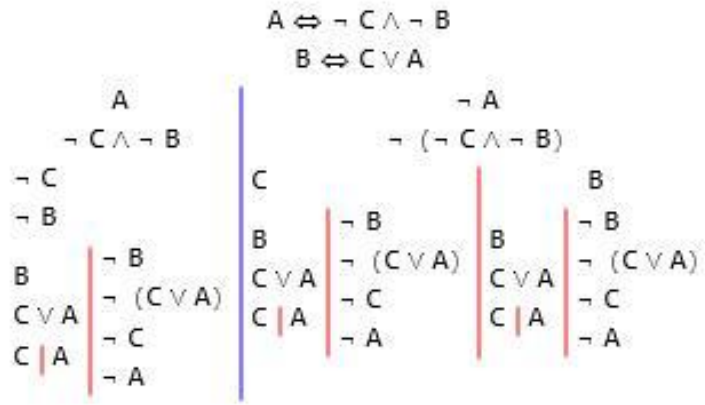
24.


A ⇔ B ∧ C
B ⇔ ¬ C ∨ ¬ A
A
B ∧ C
B
C
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ B
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ A
¬ (B ∧ C)
¬ C
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A

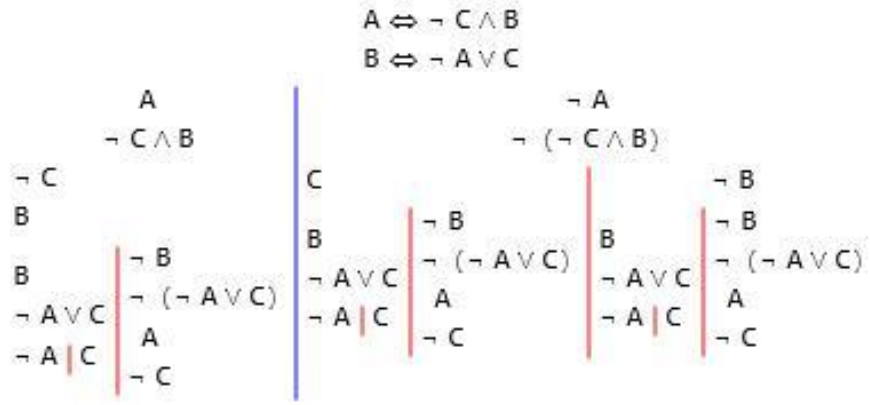
25.


A ⇔ ¬ C ∧ ¬ B
B ⇔ A ∨ C
A
¬ C ∧ ¬ B
¬ C
¬ B
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
C
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
¬ A
¬ (¬ C ∧ ¬ B)
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C

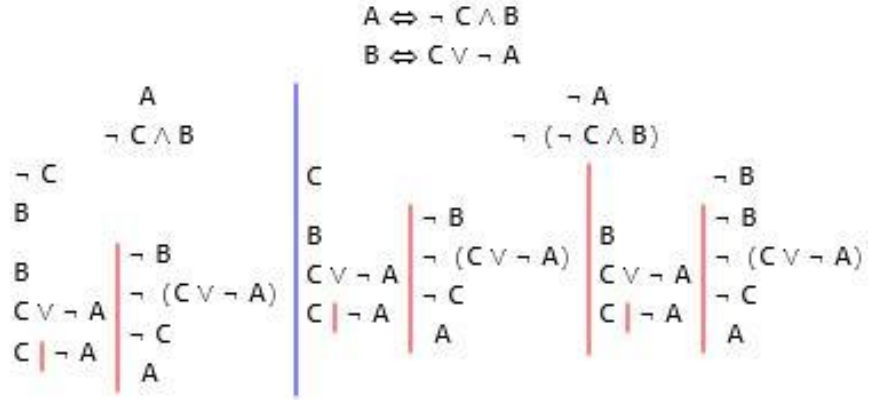
26.


A ⇔ ¬ C ∧ ¬ B
B ⇔ C ∨ A
A
¬ C ∧ ¬ B
¬ C
¬ B
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
C
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
¬ A
¬ (¬ C ∧ ¬ B)
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A

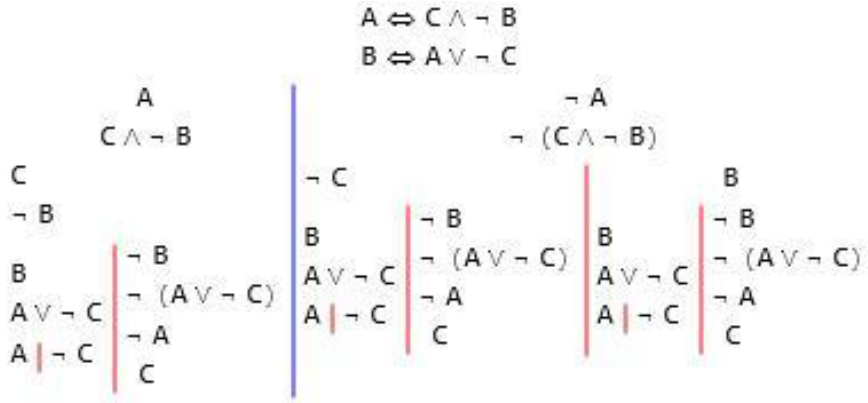
27.


A ⇔ ¬ C ∧ B
B ⇔ ¬ A ∨ C
A
¬ C ∧ B
¬ C
B
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C
C
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C
¬ A
¬ (¬ C ∧ B)
B
¬ A ∨ C
¬ A | C
¬ B
¬ B
¬ (¬ A ∨ C)
A
¬ C

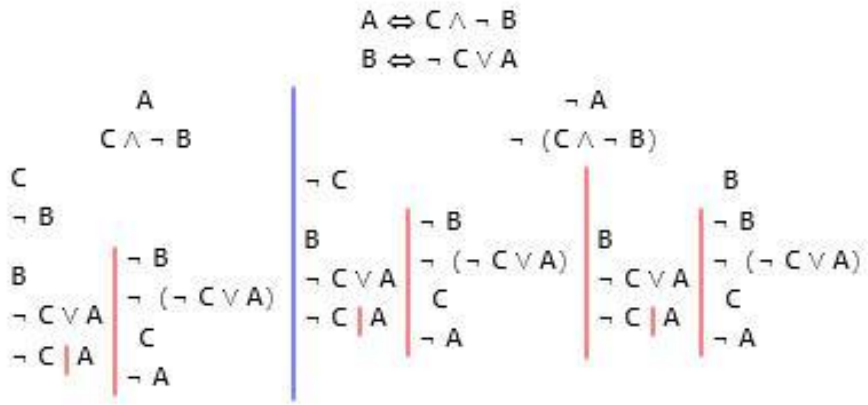
28.


A ⇔ ¬ C ∧ B
B ⇔ C ∨ ¬ A
A
¬ C ∧ B
¬ C
B
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A
C
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A
¬ A
¬ (¬ C ∧ B)
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ B
¬ (C ∨ ¬ A)
¬ C
A

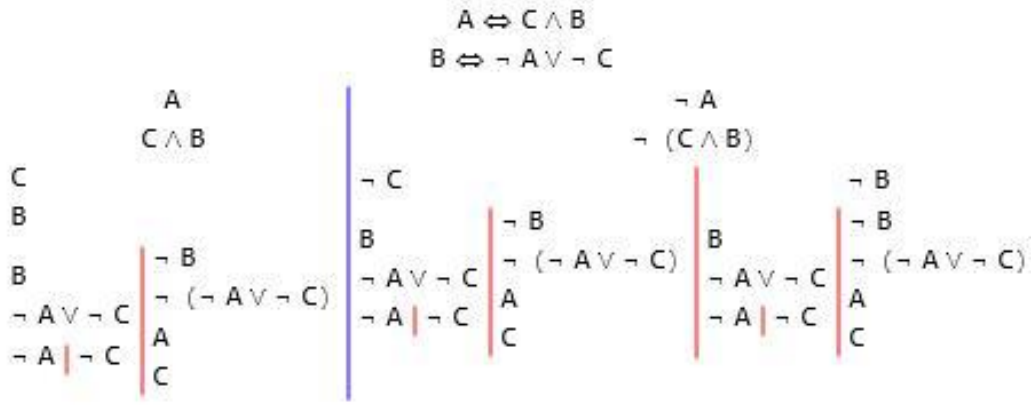
29.


A ⇔ C ∧ ¬ B
B ⇔ A ∨ ¬ C
A
C ∧ ¬ B
C
¬ B
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
¬ C
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
¬ A
¬ (C ∧ ¬ B)
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C

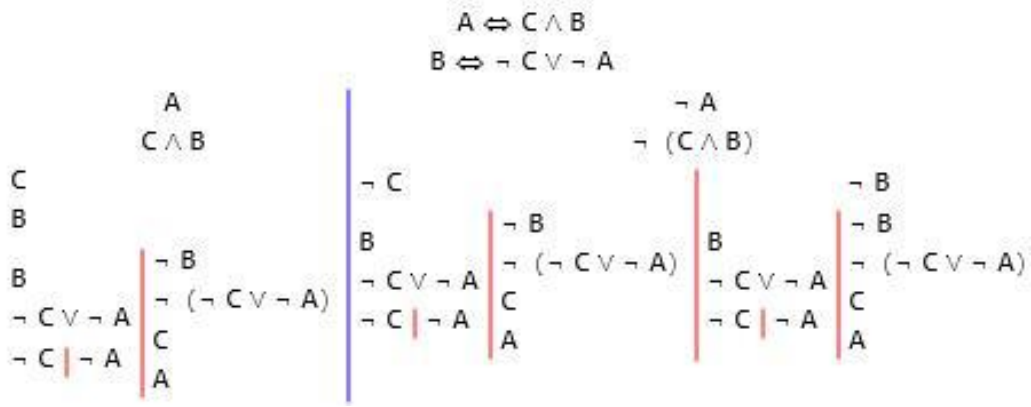
30.


A ⇔ C ∧ ¬ B
B ⇔ ¬ C ∨ A
A
C ∧ ¬ B
C
¬ B
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
¬ C
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
¬ A
¬ (C ∧ ¬ B)
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A

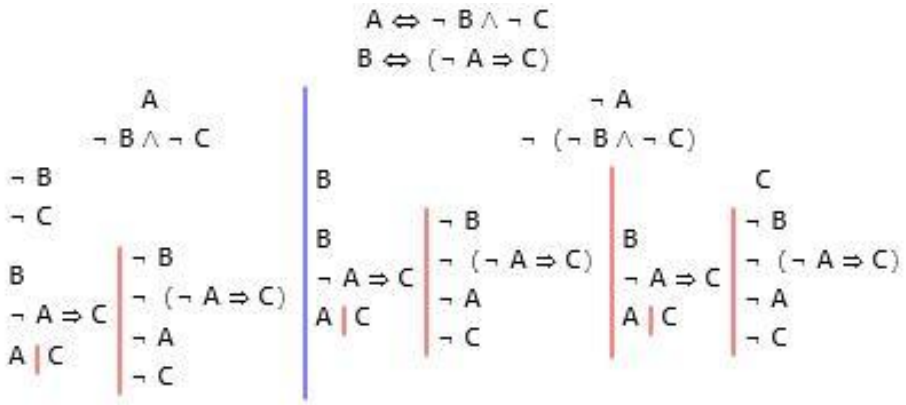
31.


A ⇔ C ∧ B
B ⇔ ¬ A ∨ ¬ C
A
C ∧ B
C
B
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ C
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ A
¬ (C ∧ B)
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ B
¬ (¬ A ∨ ¬ C)
A
C

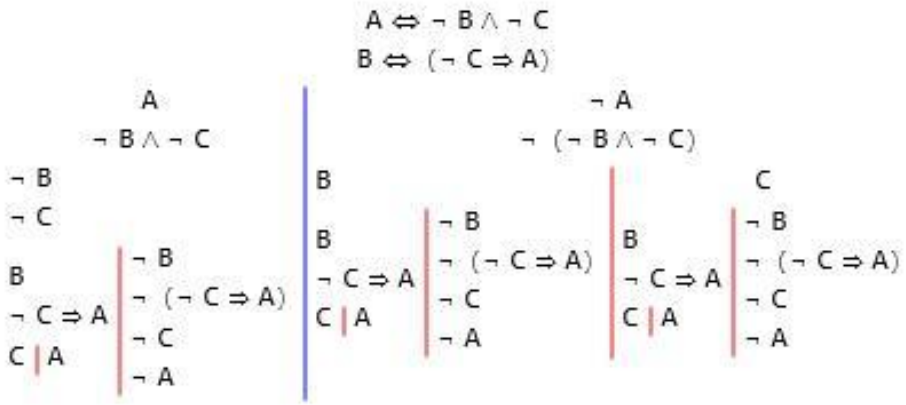
32.


A ⇔ C ∧ B
B ⇔ ¬ C ∨ ¬ A
A
C ∧ B
C
B
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ C
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ A
¬ (C ∧ B)
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ B
¬ (¬ C ∨ ¬ A)
C
A

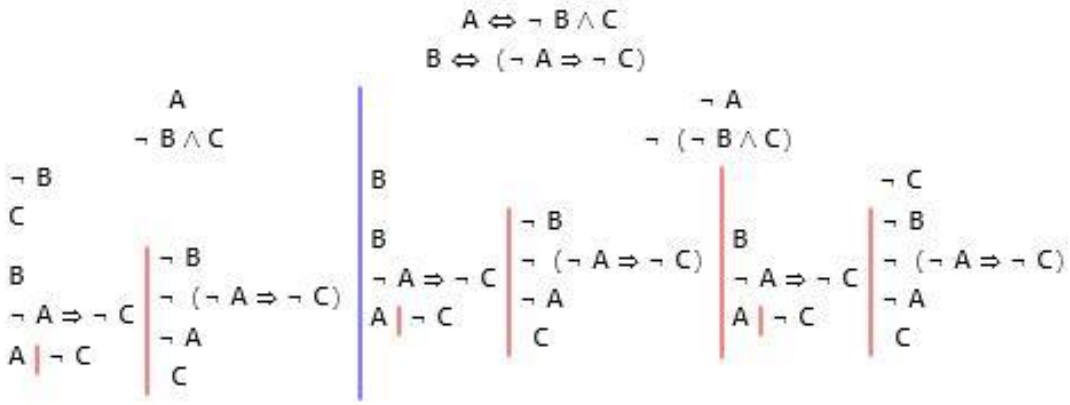
33.


A ⇔ ¬ B ∧ ¬ C
B ⇔ (¬ A ⇒ C)
A
¬ B ∧ ¬ C
¬ B
¬ C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
¬ A
¬ (¬ B ∧ ¬ C)
B
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C

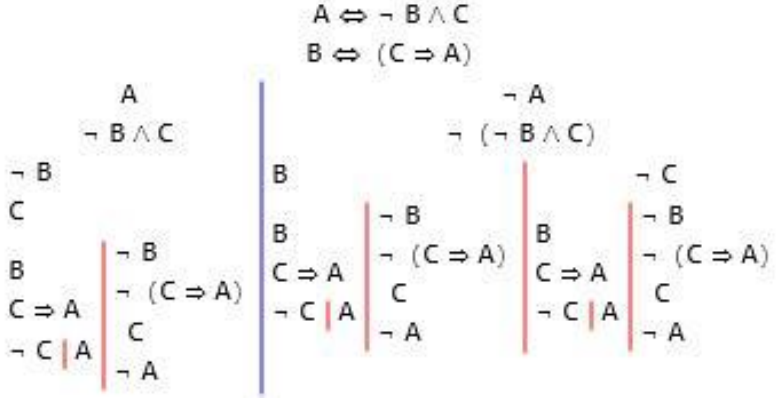
34.


A ⇔ ¬ B ∧ ¬ C
B ⇔ (¬ C ⇒ A)
A
¬ B ∧ ¬ C
¬ B
¬ C
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
¬ A
¬ (¬ B ∧ ¬ C)
B
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
C
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A

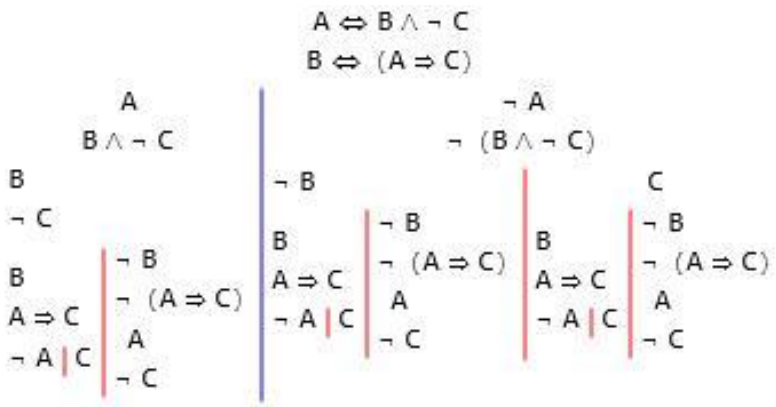
35.


A ⇔ ¬ B ∧ C
B ⇔ (¬ A ⇒ ¬ C)
A
¬ B ∧ C
¬ B
C
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
¬ A
¬ (¬ B ∧ C)
B
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
¬ C
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C

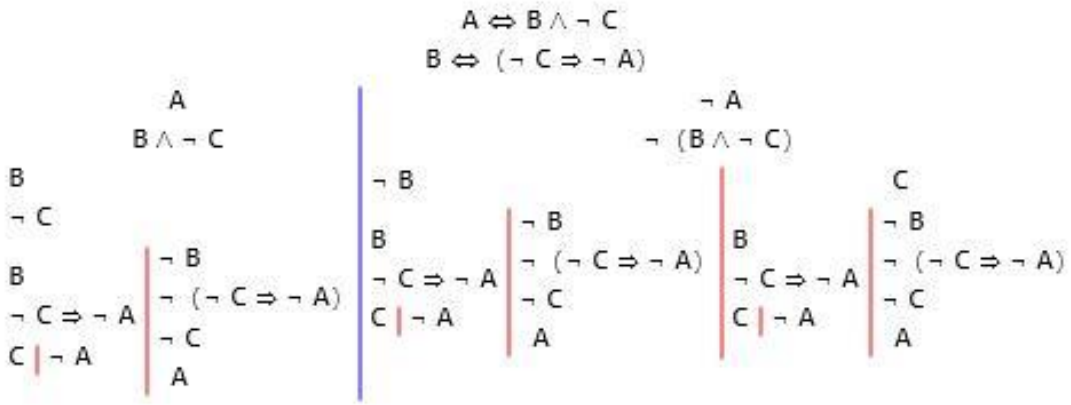
36.


A ⇔ ¬ B ∧ C
B ⇔ (C ⇒ A)
A
¬ B ∧ C
¬ B
C
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
¬ A
¬ (¬ B ∧ C)
B
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
¬ C
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A

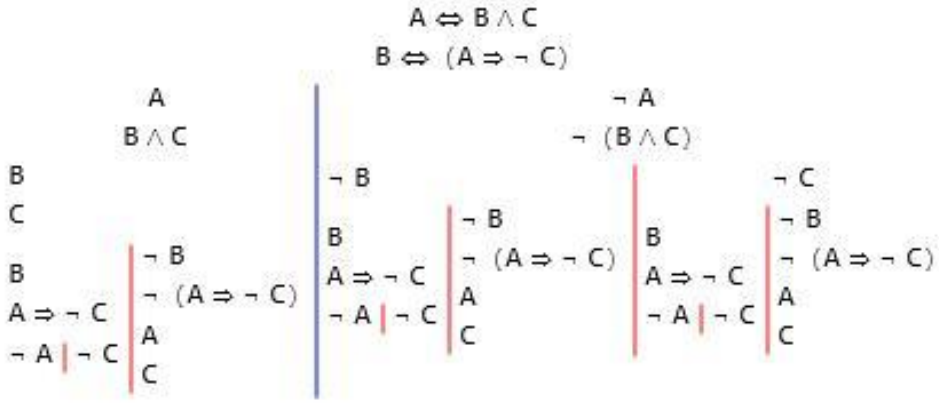
37.


A ⇔ B ∧ ¬ C
B ⇔ (A ⇒ C)
A
B ∧ ¬ C
B
¬ C
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C
¬ A
¬ (B ∧ ¬ C)
¬ B
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C
C
¬ B
¬ (A ⇒ C)
A
¬ C

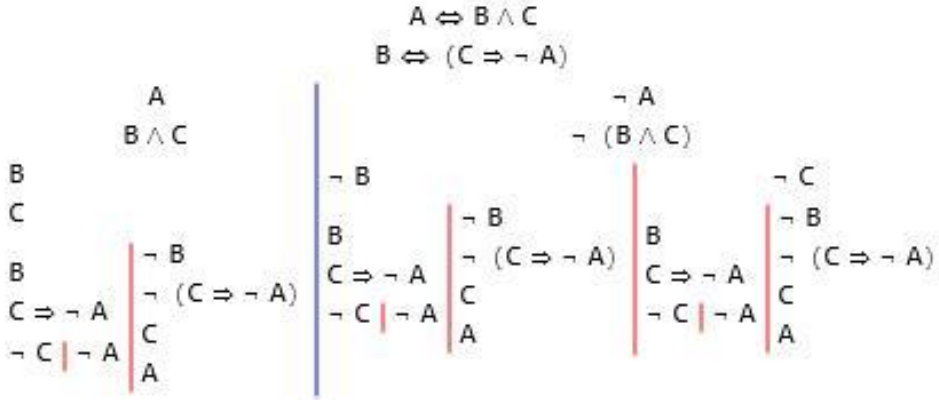
38.


A ⇔ B ∧ ¬ C
B ⇔ (¬ C ⇒ ¬ A)
A
B ∧ ¬ C
B
¬ C
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A
¬ A
¬ (B ∧ ¬ C)
¬ B
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A
C
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A

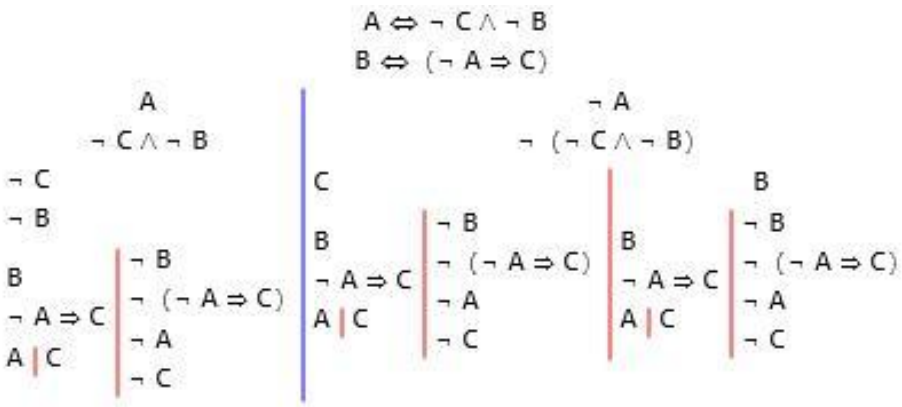
39.


A ⇔ B ∧ C
B ⇔ (A ⇒ ¬ C)
A
B ∧ C
B
C
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C
¬ A
¬ (B ∧ C)
¬ B
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C
¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C

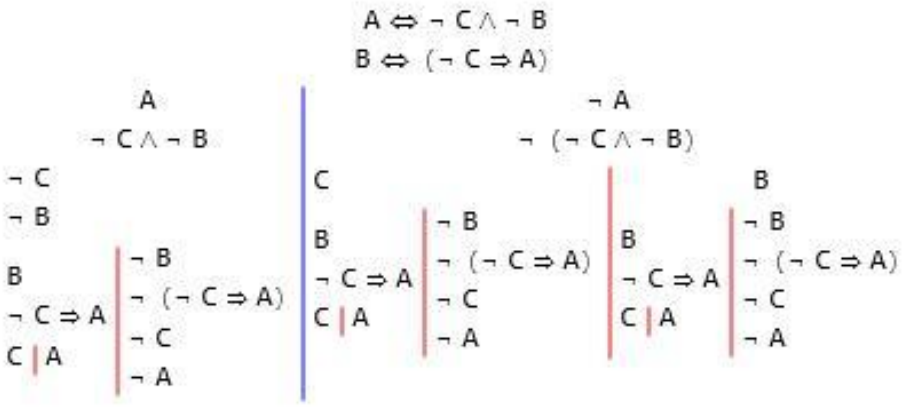
40.


A ⇔ B ∧ C
B ⇔ (C ⇒ ¬ A)
A
B ∧ C
B
C
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A
¬ A
¬ (B ∧ C)
¬ B
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A
¬ C
¬ B
¬ (C ⇒ ¬ A)
C
A

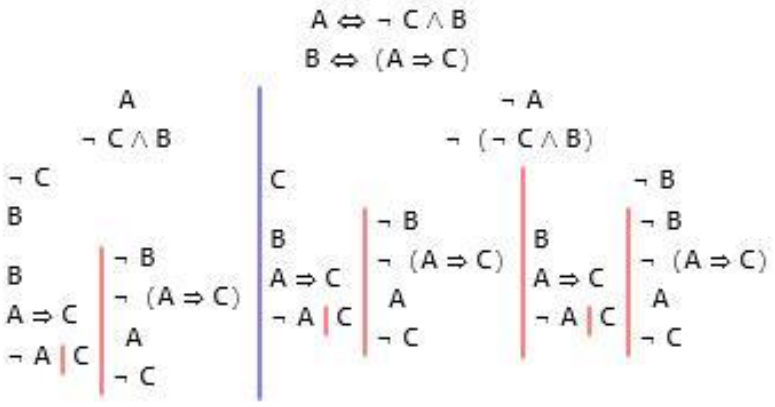
41.


A ⇔ ¬ C ∧ ¬ B
B ⇔ (¬ A ⇒ C)
A
¬ C ∧ ¬ B
¬ C
¬ B
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
¬ A
¬ (¬ C ∧ ¬ B)
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C

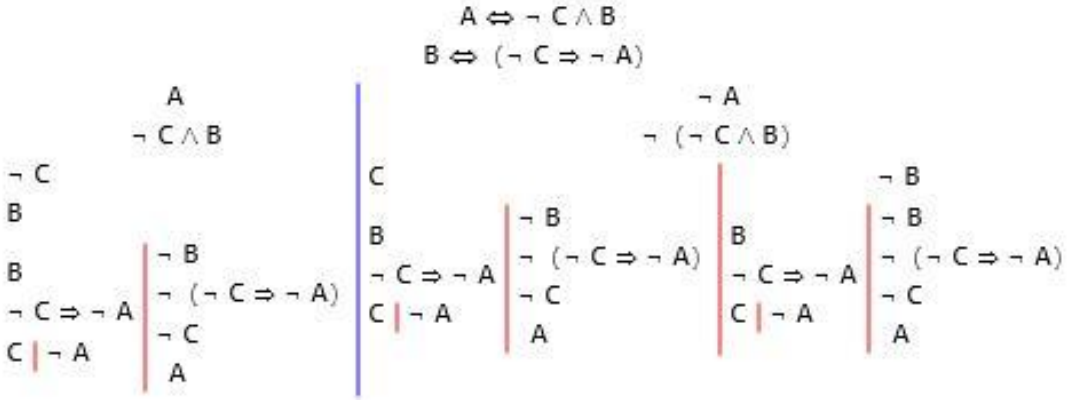
42.


A ⇔ ¬ C ∧ ¬ B
B ⇔ (¬ C ⇒ A)
A
¬ C ∧ ¬ B
¬ C
¬ B
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
C
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
¬ A
¬ (¬ C ∧ ¬ B)
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A

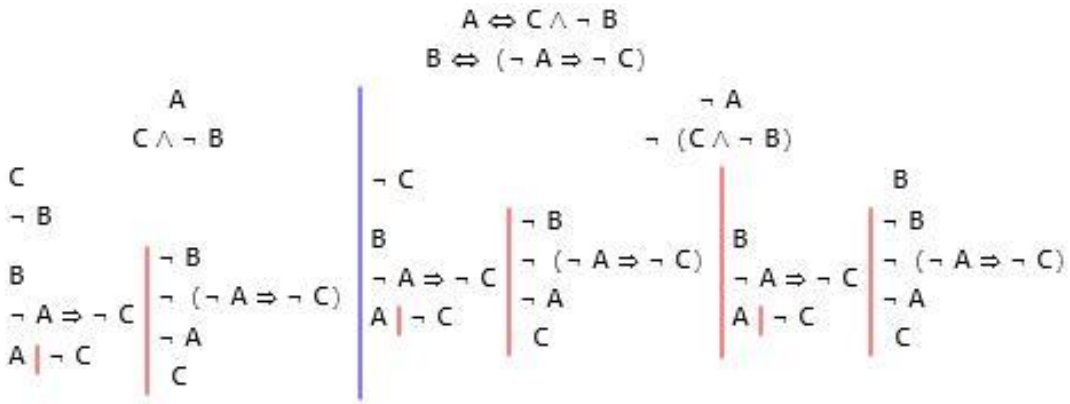
43.


A ⇔ ¬ C ∧ B
B ⇔ (A ⇒ C)
A
¬ C ∧ B
¬ C
B
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C
C
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C
¬ A
¬ (¬ C ∧ B)
B
A ⇒ C
¬ A | C
¬ B
¬ B
¬ (A ⇒ C)
A
¬ C

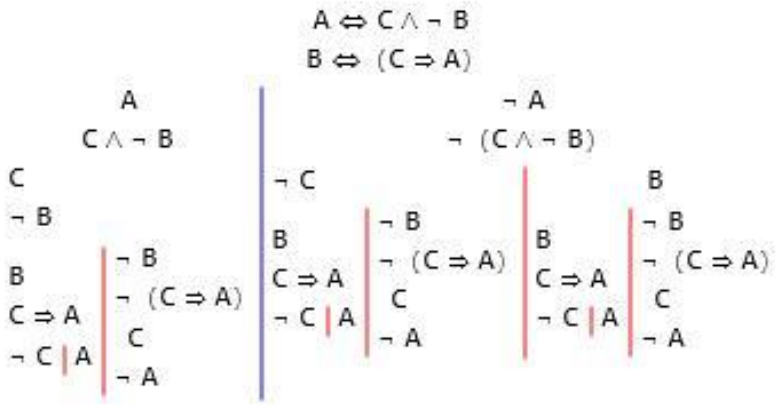
44.


A ⇔ ¬ C ∧ B
B ⇔ (¬ C ⇒ ¬ A)
A
¬ C ∧ B
¬ C
B
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A
C
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A
¬ A
¬ (¬ C ∧ B)
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A

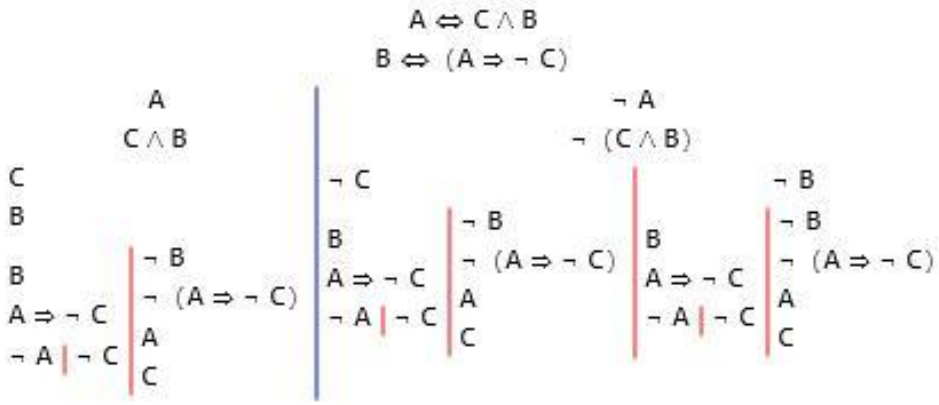
45.


A ⇔ C ∧ ¬ B
B ⇔ (¬ A ⇒ ¬ C)
A
C ∧ ¬ B
C
¬ B
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
¬ C
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
¬ A
¬ (C ∧ ¬ B)
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
B
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C

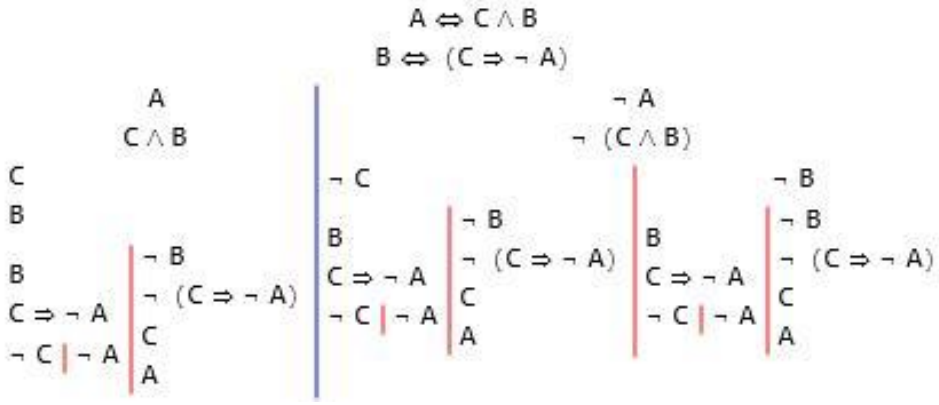
46.


A ⇔ C ∧ ¬ B
B ⇔ (C ⇒ A)
A
C ∧ ¬ B
C
¬ B
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
¬ C
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
¬ A
¬ (C ∧ ¬ B)
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
B
¬ B
¬ (C ⇒ A)
C
¬ A

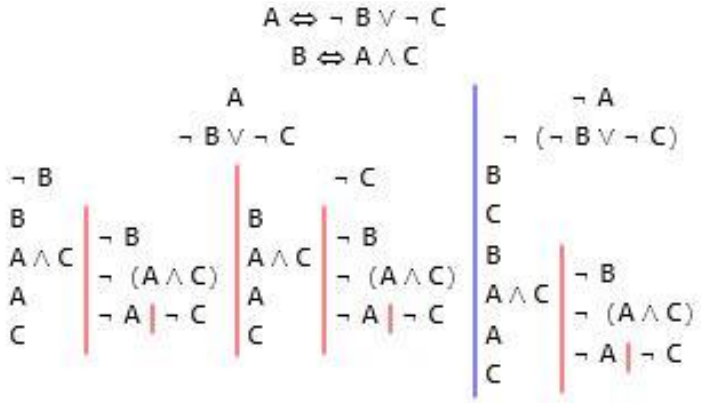
47.


A ⇔ C ∧ B
B ⇔ (A ⇒ ¬ C)
A
C ∧ B
C
B
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C
¬ C
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C
¬ A
¬ (C ∧ B)
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C
B
¬ B
¬ (A ⇒ ¬ C)
A
C

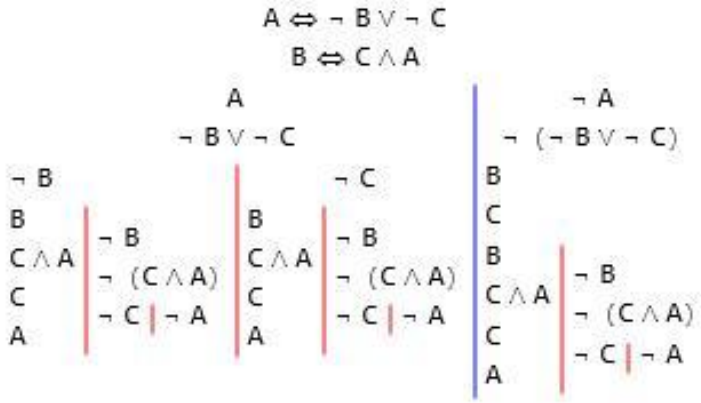
48.


A ⇔ C ∧ B
B ⇔ (C ⇒ ¬ A)
A
C ∧ B
C
B
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A
¬ C
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A
¬ A
¬ (C ∧ B)
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A
B
¬ B
¬ (C ⇒ ¬ A)
C
A

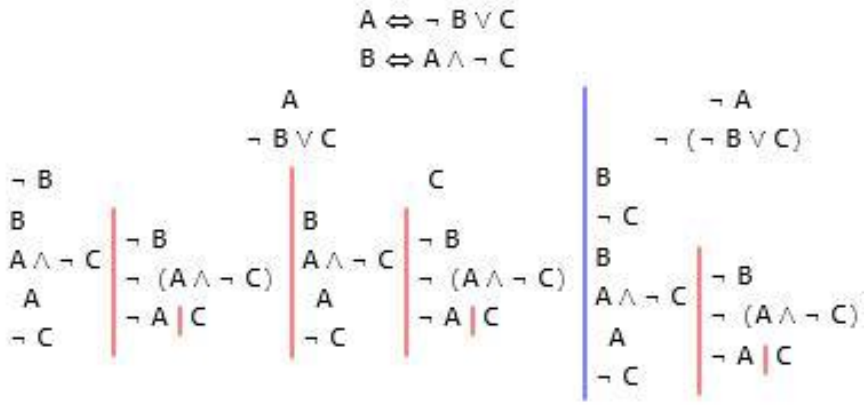
49.


A ⇔ ¬ B ∨ ¬ C
B ⇔ A ∧ C
A
¬ B ∨ ¬ C
¬ B
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
¬ C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
¬ A
¬ (¬ B ∨ ¬ C)
B
C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C

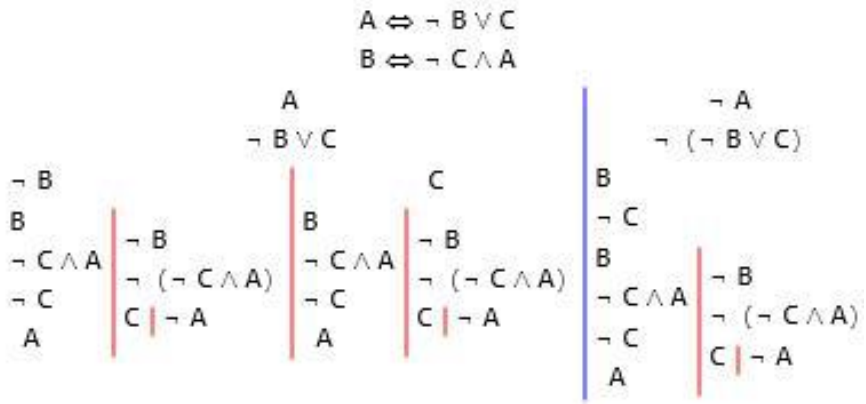
50.


A ⇔ ¬ B ∨ ¬ C
B ⇔ C ∧ A
A
¬ B ∨ ¬ C
¬ B
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
¬ C
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
¬ A
¬ (¬ B ∨ ¬ C)
B
C
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A

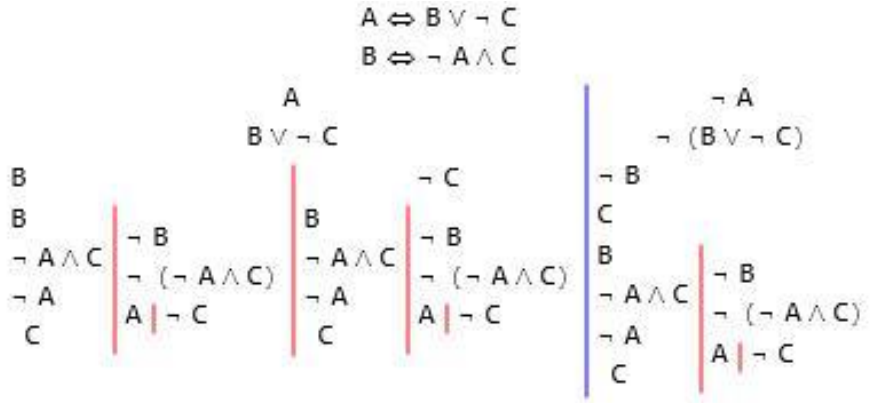
51.


A ⇔ ¬ B ∨ C
B ⇔ A ∧ ¬ C
A
¬ B ∨ C
¬ B
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
C
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
¬ A
¬ (¬ B ∨ C)
B
¬ C
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C

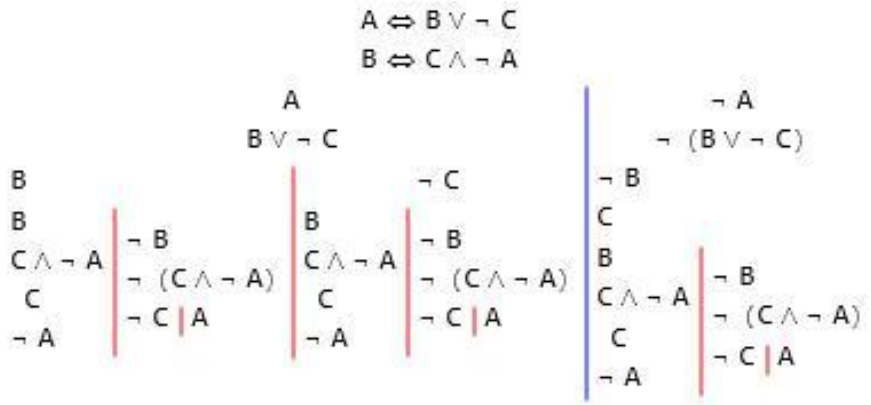
52.


A ⇔ ¬ B ∨ C
B ⇔ ¬ C ∧ A
A
¬ B ∨ C
¬ B
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
C
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
¬ A
¬ (¬ B ∨ C)
B
¬ C
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A

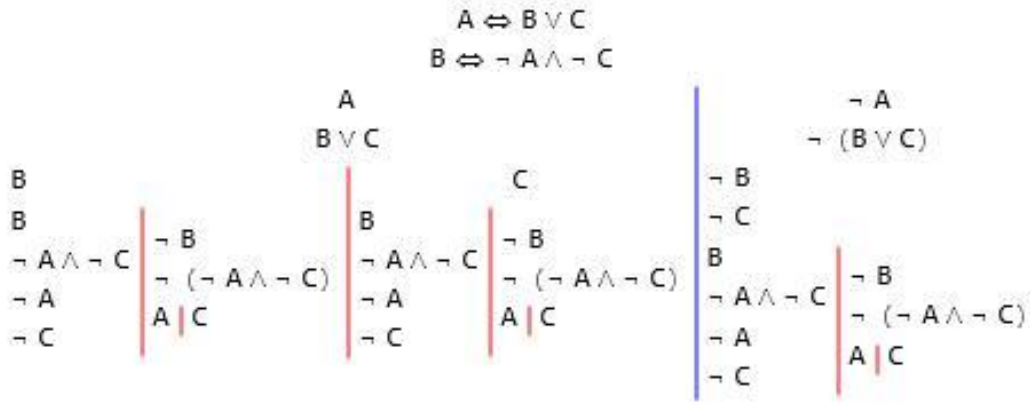
53.


A ⇔ B ∨ ¬ C
B ⇔ ¬ A ∧ C
A
B ∨ ¬ C
B
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
¬ C
¬ A
¬ (B ∨ ¬ C)
¬ B
C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C

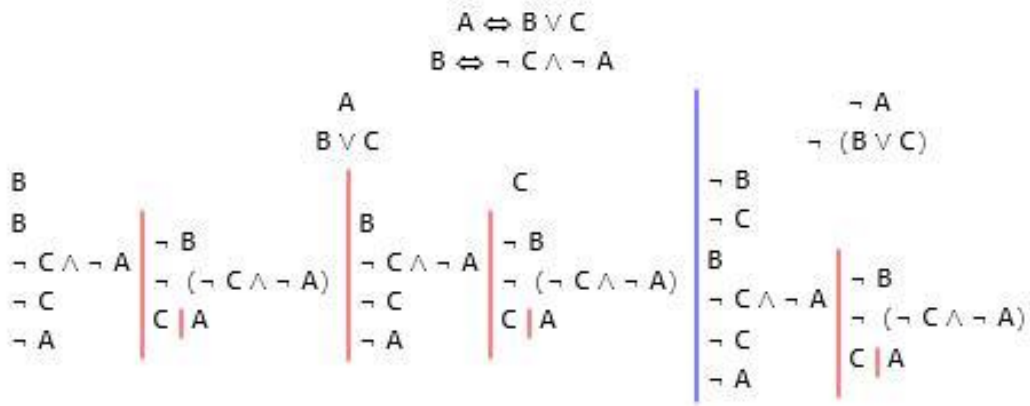
54.


A ⇔ B ∨ ¬ C
B ⇔ C ∧ ¬ A
A
B ∨ ¬ C
B
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
¬ C
¬ A
¬ (B ∨ ¬ C)
¬ B
C
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A

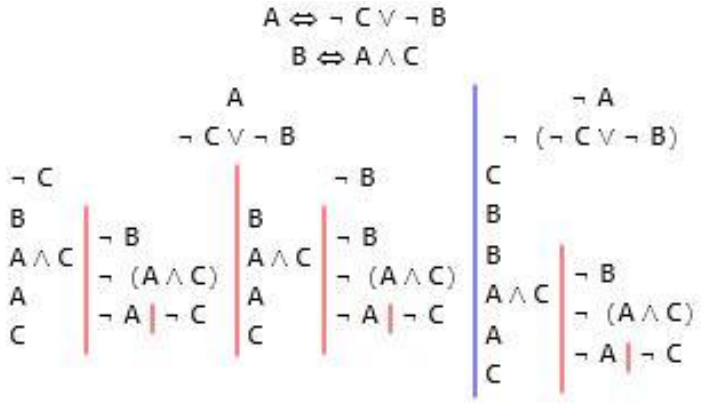
55.


A ⇔ B ∨ C
B ⇔ ¬ A ∧ ¬ C
A
B ∨ C
B
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
C
¬ A
¬ (B ∨ C)
¬ B
¬ C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C

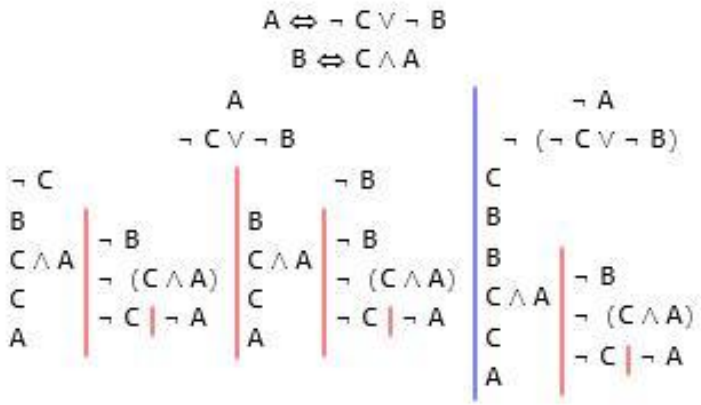
56.


A ⇔ B ∨ C
B ⇔ ¬ C ∧ ¬ A
A
B ∨ C
B
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
C
¬ A
¬ (B ∨ C)
¬ B
¬ C
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A

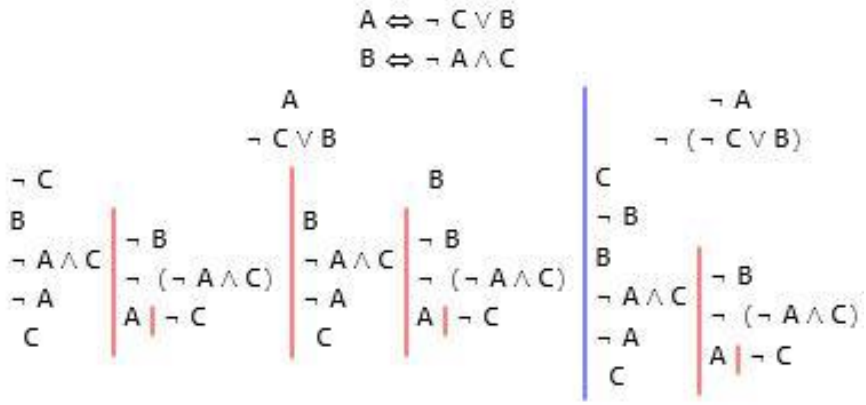
57.


A ⇔ ¬ C ∨ ¬ B
B ⇔ A ∧ C
A
¬ C ∨ ¬ B
¬ C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C
¬ A
¬ (¬ C ∨ ¬ B)
C
B
B
A ∧ C
A
C
¬ B
¬ (A ∧ C)
¬ A | ¬ C

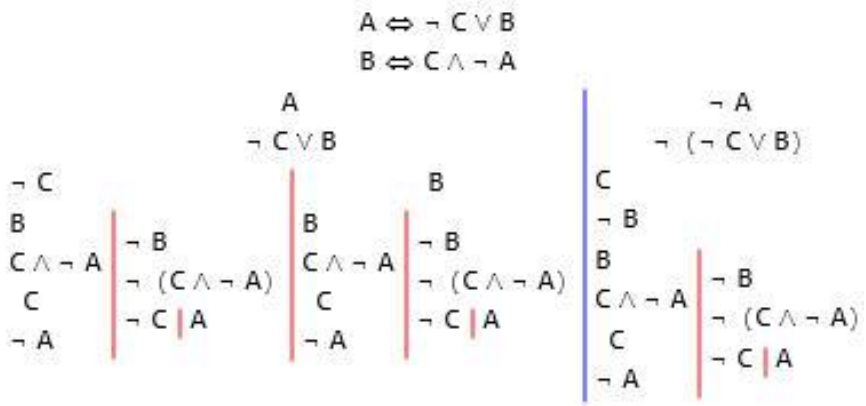
58.


A ⇔ ¬ C ∨ ¬ B
B ⇔ C ∧ A
A
¬ C ∨ ¬ B
¬ C
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A
¬ A
¬ (¬ C ∨ ¬ B)
C
B
B
C ∧ A
C
A
¬ B
¬ (C ∧ A)
¬ C | ¬ A

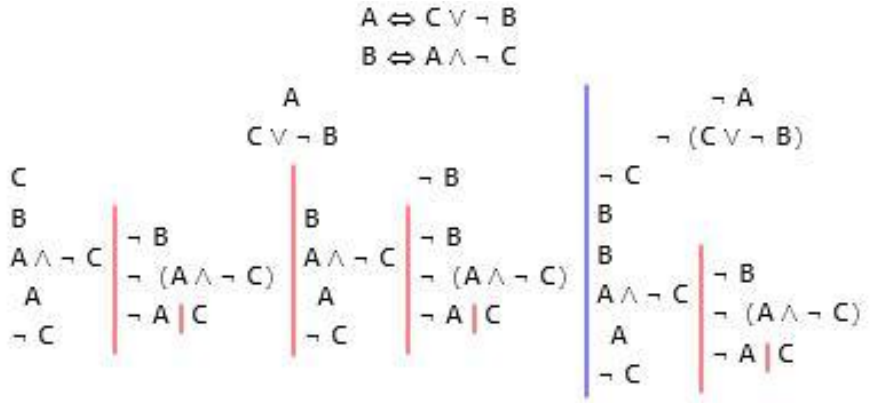
59.


A ⇔ ¬ C ∨ B
B ⇔ ¬ A ∧ C
A
¬ C ∨ B
¬ C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
B
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
¬ A
¬ (¬ C ∨ B)
C
¬ B
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C

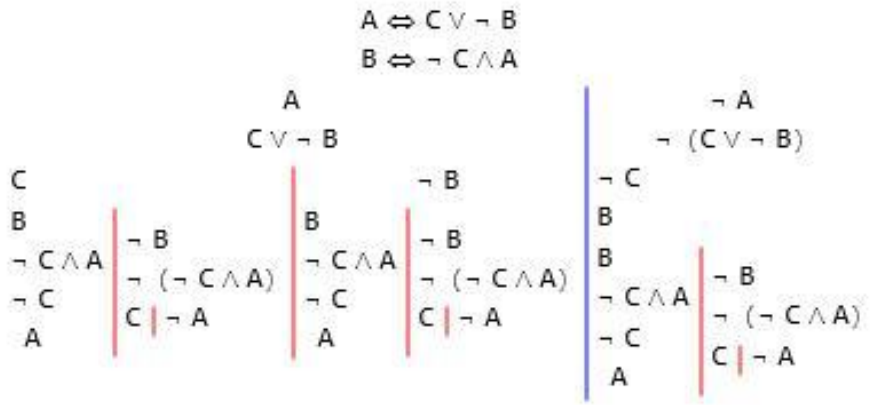
60.


A ⇔ ¬ C ∨ B
B ⇔ C ∧ ¬ A
A
¬ C ∨ B
¬ C
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
B
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
¬ A
¬ (¬ C ∨ B)
C
¬ B
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A

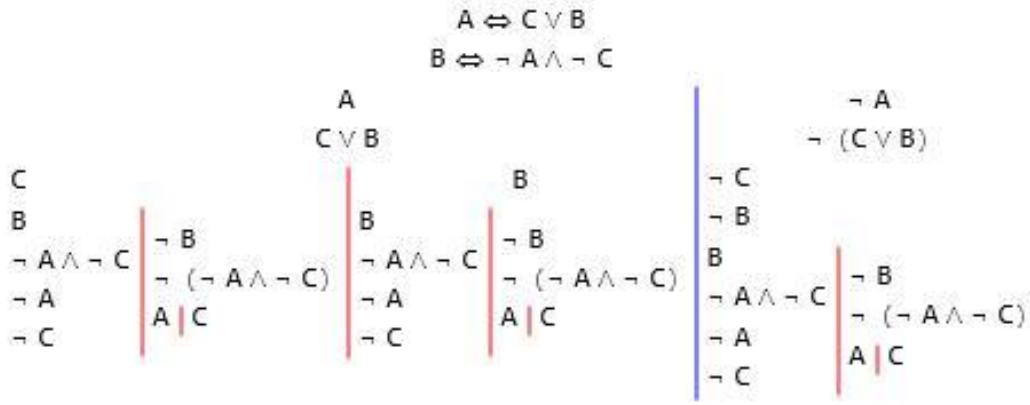
61.


A ⇔ C ∨ ¬ B
B ⇔ A ∧ ¬ C
A
C ∨ ¬ B
C
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C
¬ A
¬ (C ∨ ¬ B)
¬ C
B
B
A ∧ ¬ C
A
¬ C
¬ B
¬ (A ∧ ¬ C)
¬ A | C

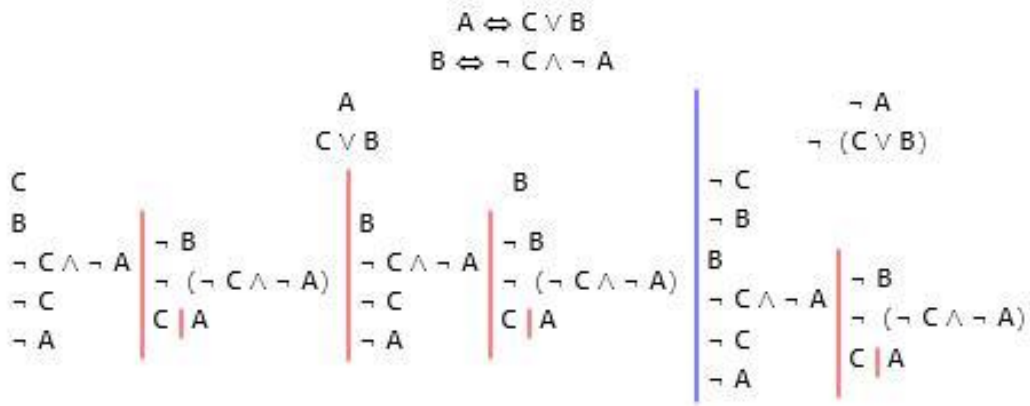
62.


A ⇔ C ∨ ¬ B
B ⇔ ¬ C ∧ A
A
C ∨ ¬ B
C
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A
¬ A
¬ (C ∨ ¬ B)
¬ C
B
B
¬ C ∧ A
¬ C
A
¬ B
¬ (¬ C ∧ A)
C | ¬ A

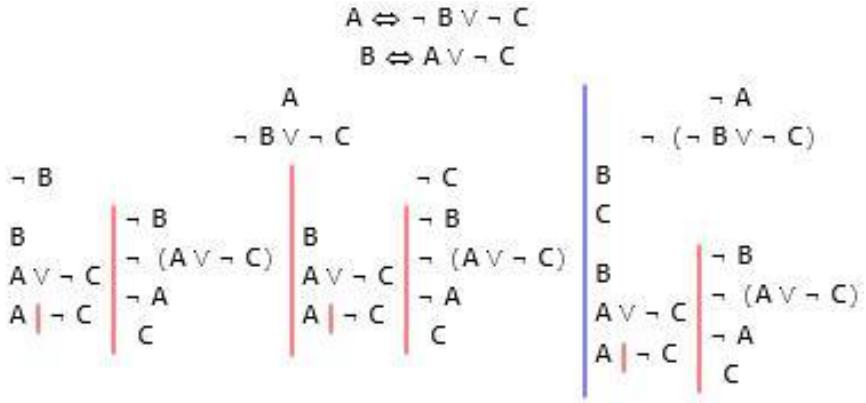
63.


A ⇔ C ∨ B
B ⇔ ¬ A ∧ ¬ C
A
C ∨ B
C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
¬ A
¬ (C ∨ B)
¬ C
¬ B
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C

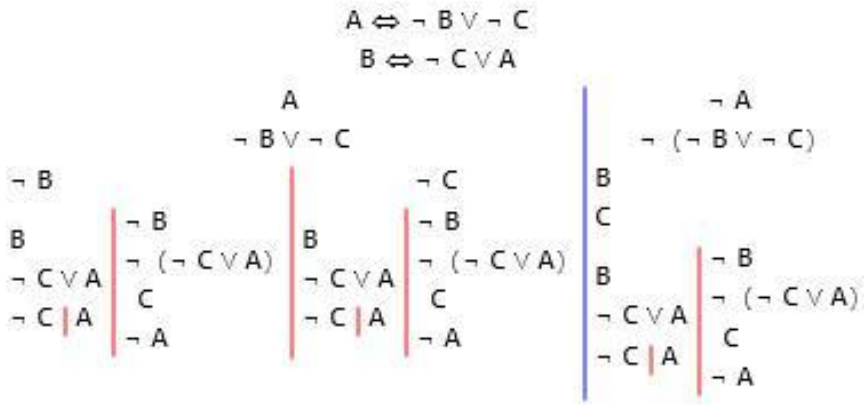
64.


A ⇔ C ∨ B
B ⇔ ¬ C ∧ ¬ A
A
C ∨ B
C
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
¬ A
¬ (C ∨ B)
¬ C
¬ B
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A

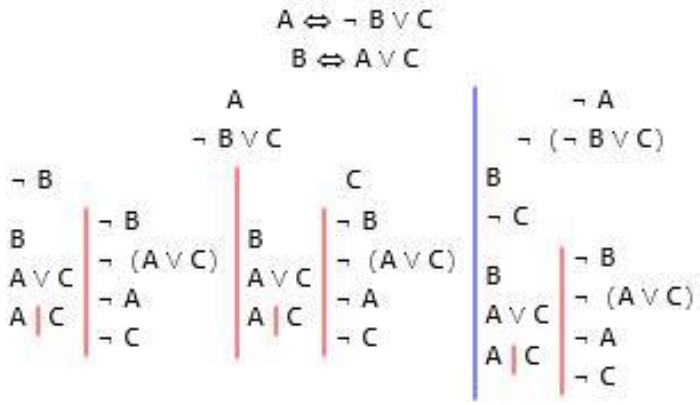
65.


A ⇔ ¬ B ∨ ¬ C
B ⇔ A ∨ ¬ C
¬ B
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
A
¬ B ∨ ¬ C
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
¬ C
¬ A
¬ (¬ B ∨ ¬ C)
B
C
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C

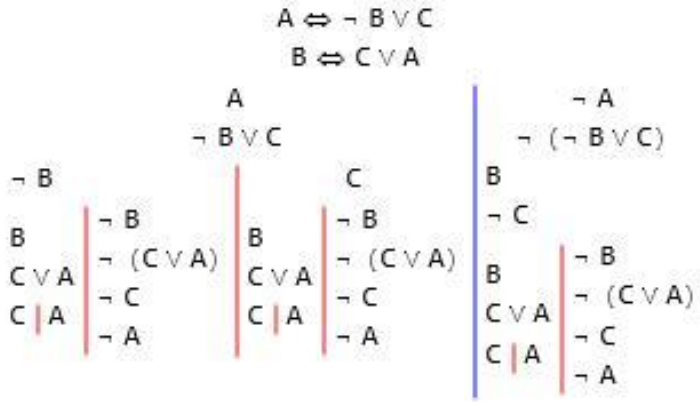
66.


A ⇔ ¬ B ∨ ¬ C
B ⇔ ¬ C ∨ A
¬ B
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
A
¬ B ∨ ¬ C
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
¬ C
¬ A
¬ (¬ B ∨ ¬ C)
B
C
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A

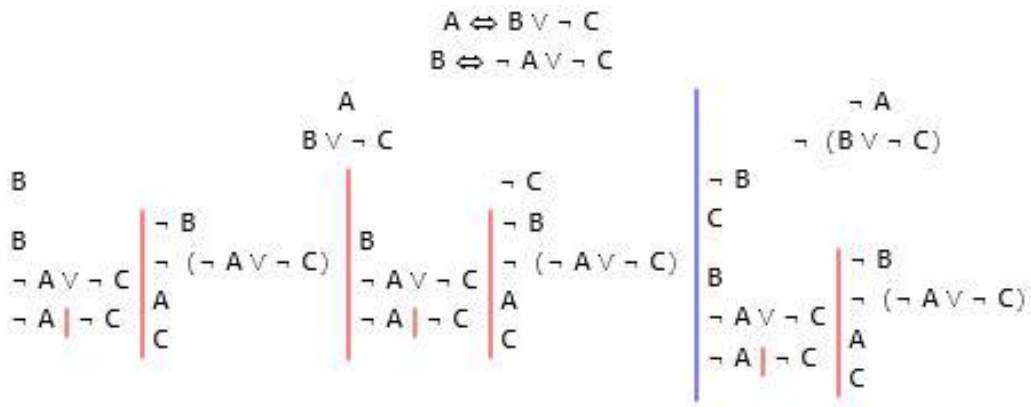
67.


A ⇔ ¬ B ∨ C
B ⇔ A ∨ C
¬ B
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
A
¬ B ∨ C
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
C
¬ A
¬ (¬ B ∨ C)
B
¬ C
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C

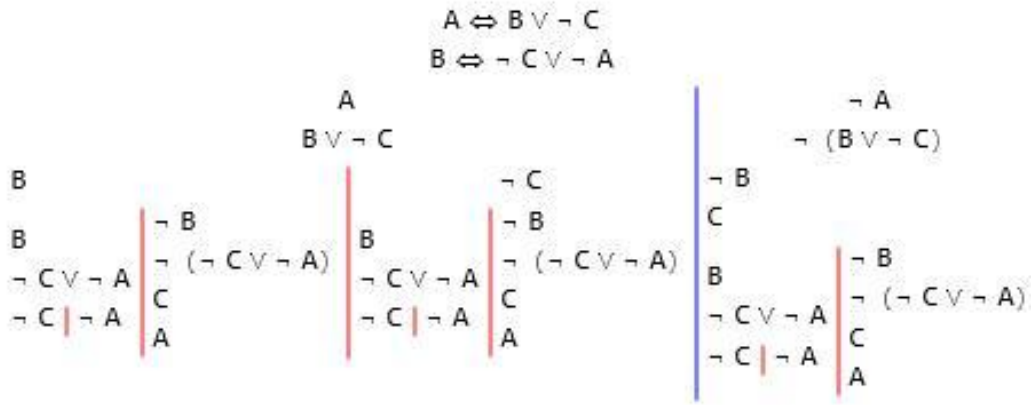
68.


A ⇔ ¬ B ∨ C
B ⇔ C ∨ A
¬ B
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
A
¬ B ∨ C
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
C
¬ A
¬ (¬ B ∨ C)
B
¬ C
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A

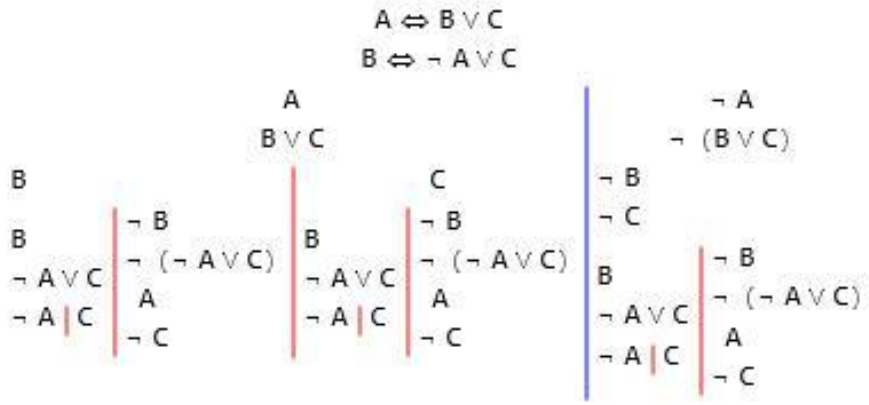
69.


A ⇔ B ∨ ¬ C
B ⇔ ¬ A ∨ ¬ C
B
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
A
B ∨ ¬ C
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ A
¬ (B ∨ ¬ C)
¬ B
C
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C

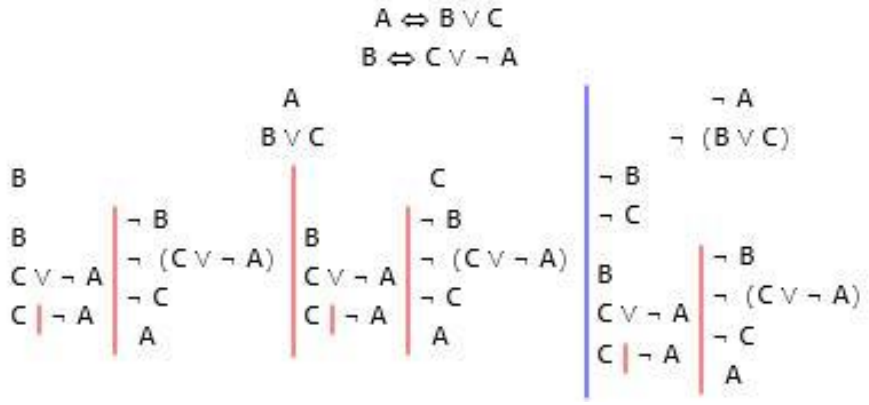
70.


A ⇔ B ∨ ¬ C
B ⇔ ¬ C ∨ ¬ A
B
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
A
B ∨ ¬ C
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ C
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ A
¬ (B ∨ ¬ C)
¬ B
C
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A

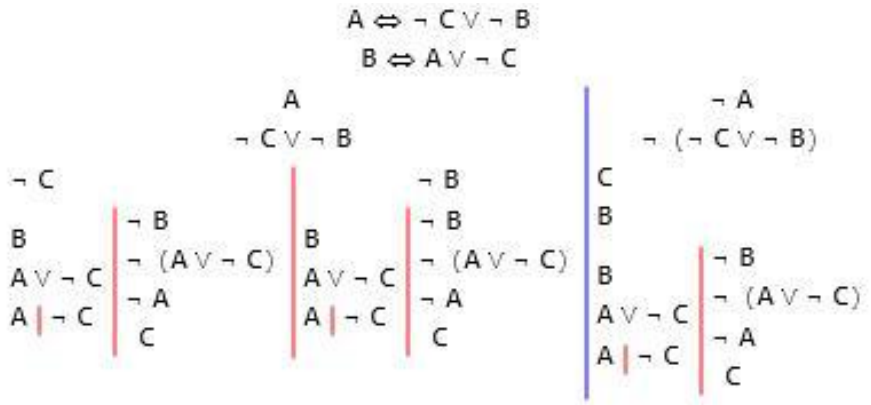
71.


A ⇔ B ∨ C
B ⇔ ¬ A ∨ C
B
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C
A
B ∨ C
B
¬ A ∨ C
¬ A | C
C
¬ B
¬ (¬ A ∨ C)
A
¬ C
¬ A
¬ (B ∨ C)
¬ B
¬ C
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C

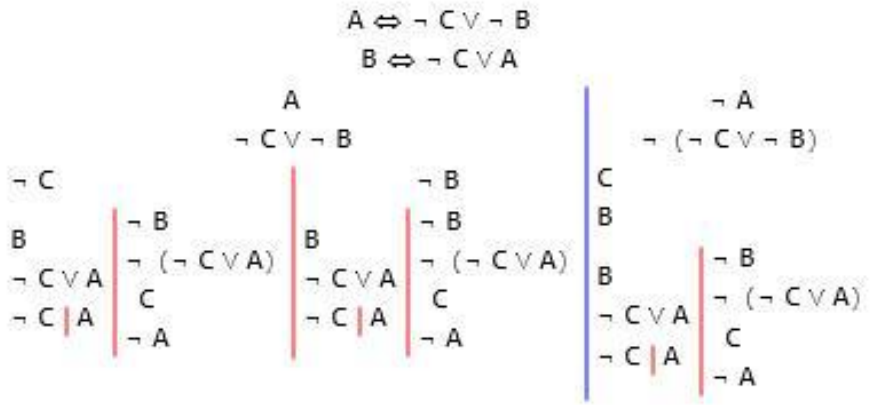
72.


A ⇔ B ∨ C
B ⇔ C ∨ ¬ A
B
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A
A
B ∨ C
B
C ∨ ¬ A
C | ¬ A
C
¬ B
¬ (C ∨ ¬ A)
¬ C
A
¬ A
¬ (B ∨ C)
¬ B
¬ C
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A

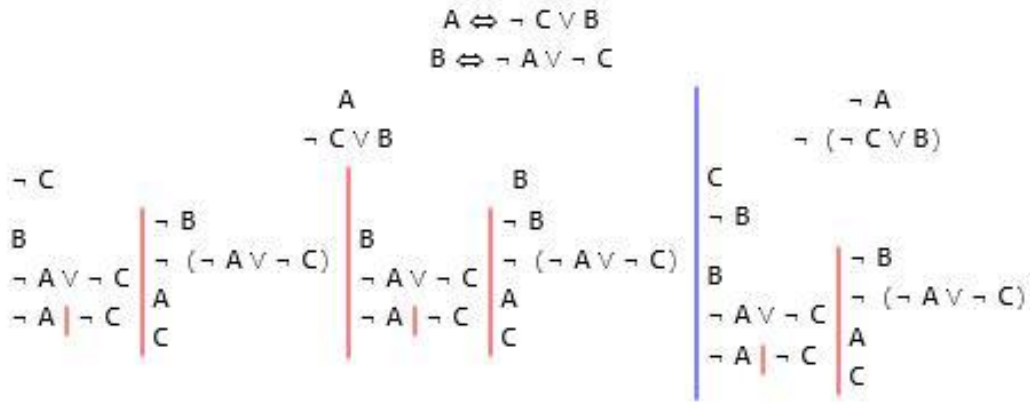
73.


A ⇔ ¬ C ∨ ¬ B
B ⇔ A ∨ ¬ C
¬ C
B
A ∨ ¬ C
A | ¬ C
¬ B
¬ (A ∨ ¬ C)
¬ A
C
A
¬ C ∨ ¬ B
¬ B
¬ (¬ C ∨ ¬ B)
C
B

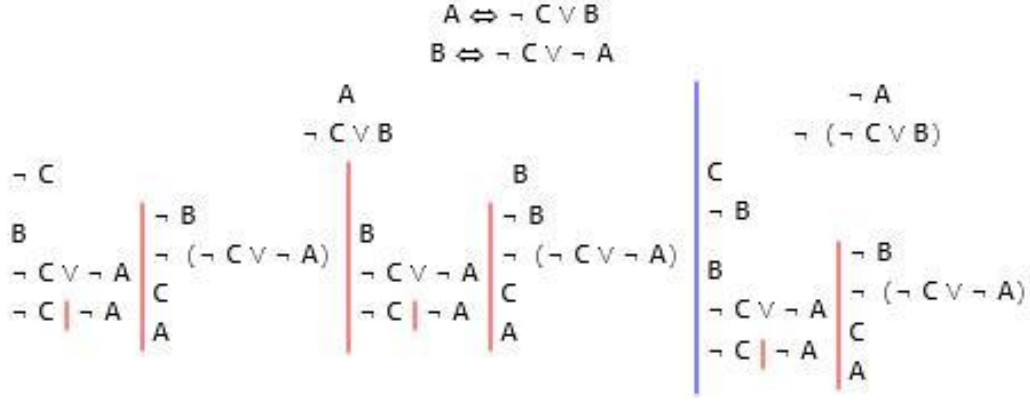
74.


A ⇔ ¬ C ∨ ¬ B
B ⇔ ¬ C ∨ A
¬ C
B
¬ C ∨ A
¬ C | A
¬ B
¬ (¬ C ∨ A)
C
¬ A
A
¬ C ∨ ¬ B
¬ B
¬ (¬ C ∨ ¬ B)
C
B

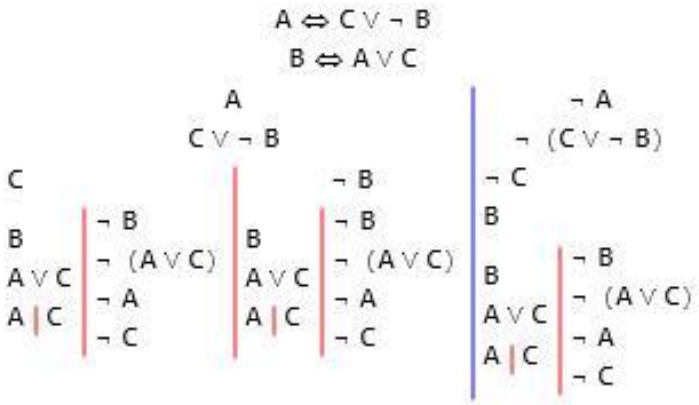
75.


A ⇔ ¬ C ∨ B
B ⇔ ¬ A ∨ ¬ C
¬ C
B
¬ A ∨ ¬ C
¬ A | ¬ C
¬ B
¬ (¬ A ∨ ¬ C)
A
C
¬ C ∨ B
¬ B
¬ (¬ C ∨ B)
C
B

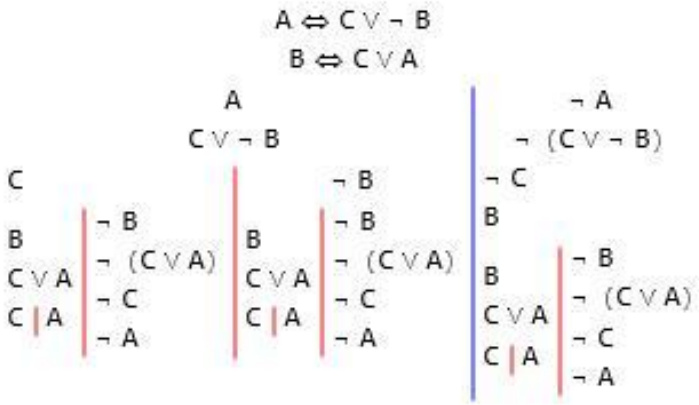
76.


A ⇔ ¬ C ∨ B
B ⇔ ¬ C ∨ ¬ A
¬ C
B
¬ C ∨ ¬ A
¬ C | ¬ A
¬ B
¬ (¬ C ∨ ¬ A)
C
A
¬ C ∨ B
¬ B
¬ (¬ C ∨ B)
C
B

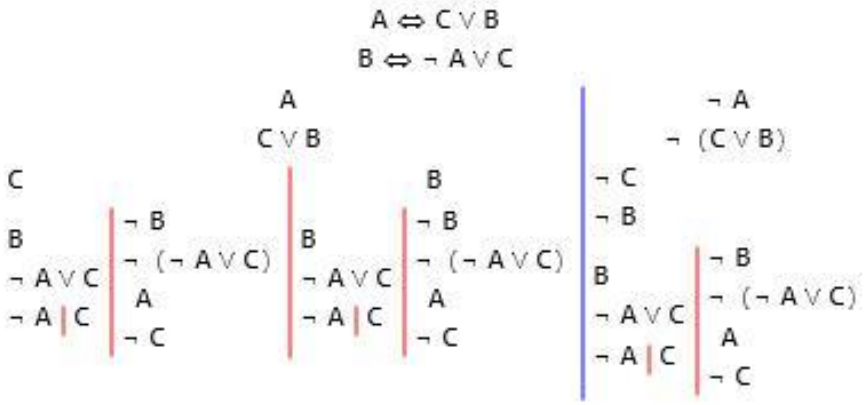
77.


A ⇔ C ∨ ¬ B
B ⇔ A ∨ C
A
C ∨ ¬ B
C
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C
¬ B
¬ B
¬ (A ∨ C)
¬ A
¬ C
¬ A
¬ (C ∨ ¬ B)
¬ C
B
B
A ∨ C
A | C
¬ B
¬ (A ∨ C)
¬ A
¬ C

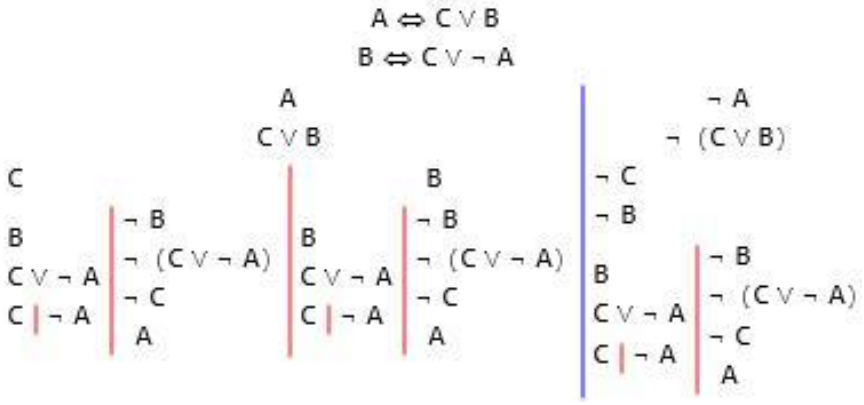
78.


A ⇔ C ∨ ¬ B
B ⇔ C ∨ A
A
C ∨ ¬ B
C
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A
¬ B
¬ B
¬ (C ∨ A)
¬ C
¬ A
¬ A
¬ (C ∨ ¬ B)
¬ C
B
B
C ∨ A
C | A
¬ B
¬ (C ∨ A)
¬ C
¬ A

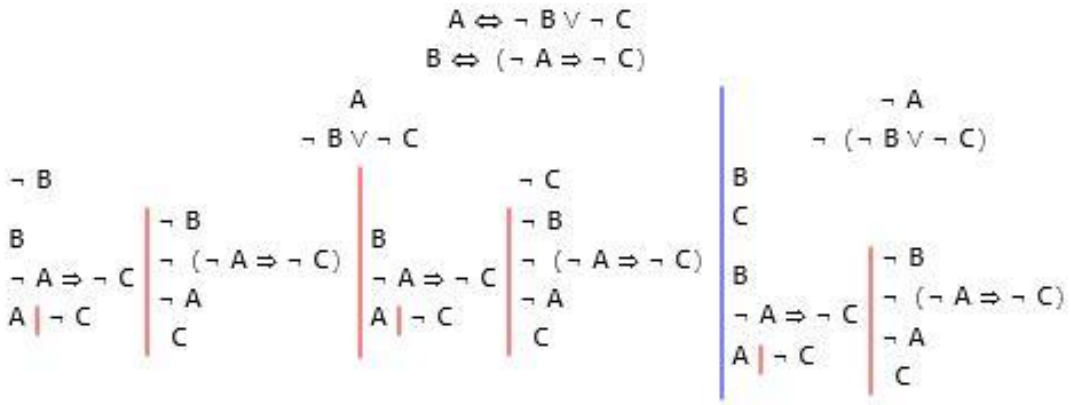
79.


A ⇔ C ∨ B
B ⇔ ¬ A ∨ C
A
C ∨ B
C
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C
B
¬ B
¬ (¬ A ∨ C)
A
¬ C
¬ A
¬ (C ∨ B)
¬ C
¬ B
B
¬ A ∨ C
¬ A | C
¬ B
¬ (¬ A ∨ C)
A
¬ C

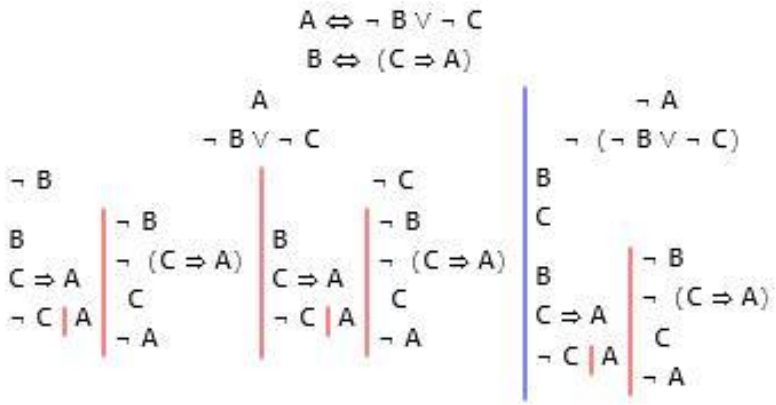
80.


A ⇔ C ∨ B
B ⇔ C ∨ ¬ A
A
C ∨ B
C
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A
B
¬ B
¬ (C ∨ ¬ A)
¬ C
A
¬ A
¬ (C ∨ B)
¬ C
¬ B
B
C ∨ ¬ A
C | ¬ A
¬ B
¬ (C ∨ ¬ A)
¬ C
A

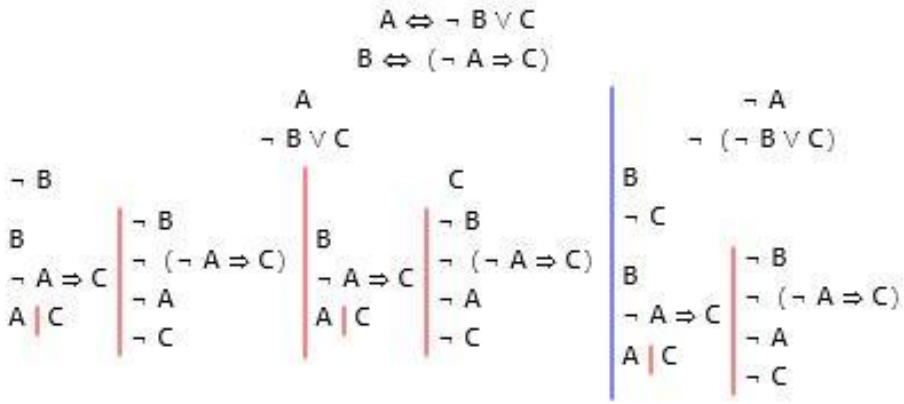
81.


A ⇔ ¬ B ∨ ¬ C
B ⇔ (¬ A ⇒ ¬ C)
¬ B
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
A
¬ B ∨ ¬ C
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
¬ C
¬ A
¬ (¬ B ∨ ¬ C)
B
C
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C

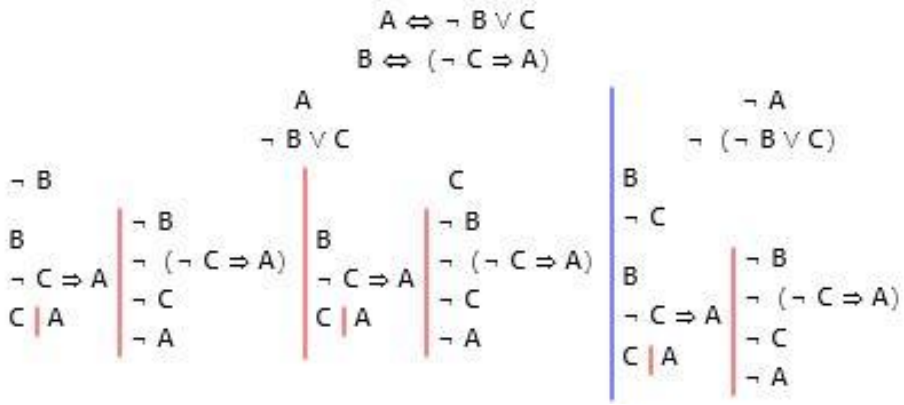
82.


A ⇔ ¬ B ∨ ¬ C
B ⇔ (C ⇒ A)
¬ B
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
A
¬ B ∨ ¬ C
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
¬ C
¬ A
¬ (¬ B ∨ ¬ C)
B
C
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A

83.

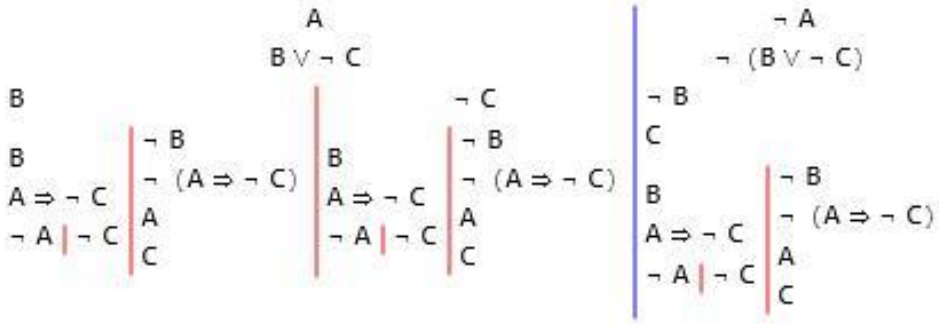

A ⇔ ¬ B ∨ C
B ⇔ (¬ A ⇒ C)
¬ B
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
A
¬ B ∨ C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
C
¬ A
¬ (¬ B ∨ C)
B
¬ C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C

84.


A ⇔ ¬ B ∨ C
B ⇔ (¬ C ⇒ A)
¬ B
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
A
¬ B ∨ C
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
C
¬ A
¬ (¬ B ∨ C)
B
¬ C
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A

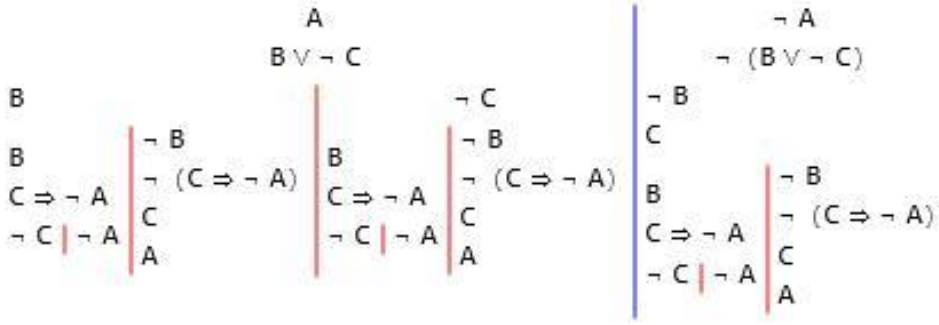
85.

$A \Leftrightarrow B \vee \neg C$
$B \Leftrightarrow (A \Rightarrow \neg C)$



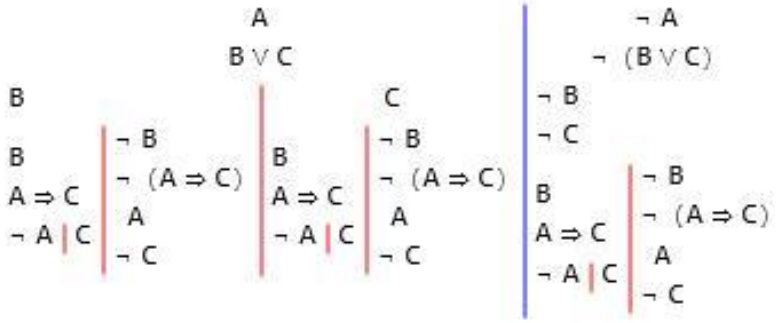
86.

$A \Leftrightarrow B \vee \neg C$
$B \Leftrightarrow (C \Rightarrow \neg A)$



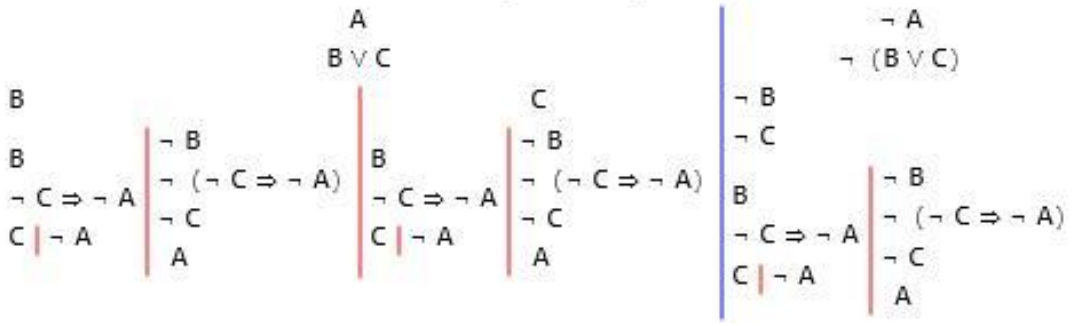
87.

$A \Leftrightarrow B \vee C$
$B \Leftrightarrow (A \Rightarrow C)$

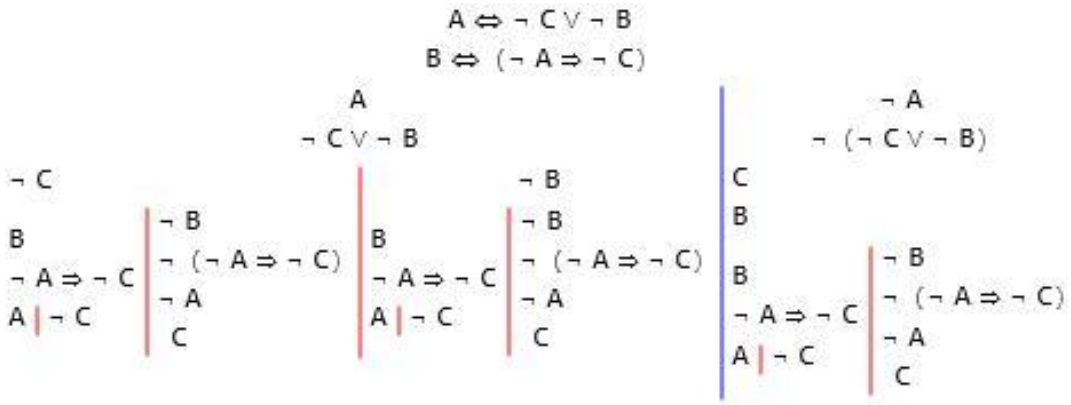


88.

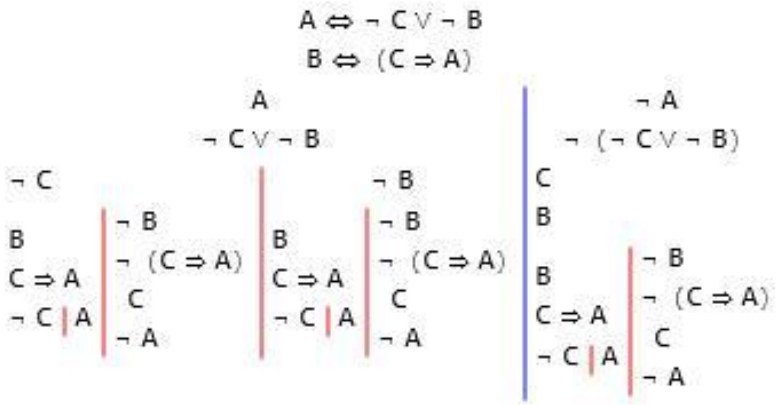
$A \Leftrightarrow B \vee C$
$B \Leftrightarrow (\neg C \Rightarrow \neg A)$



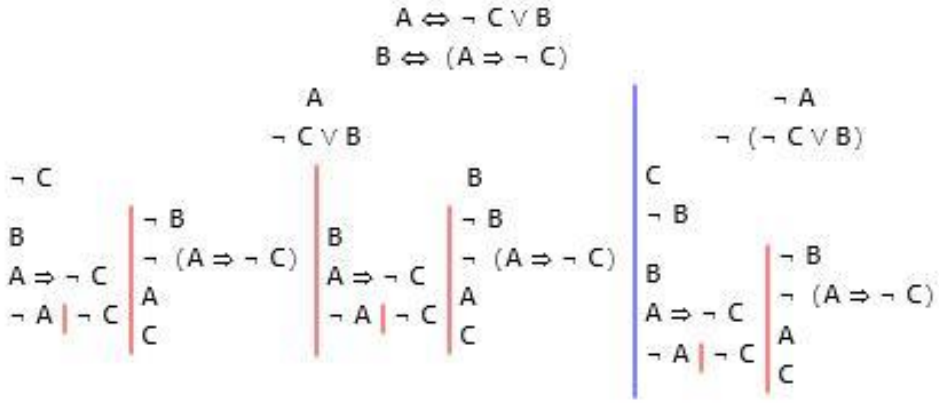
89.


A ⇔ ¬ C ∨ ¬ B
B ⇔ (¬ A ⇒ ¬ C)
¬ C
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
A
¬ C ∨ ¬ B
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C
¬ A
¬ (¬ C ∨ ¬ B)
C
B
B
¬ A ⇒ ¬ C
A | ¬ C
¬ B
¬ (¬ A ⇒ ¬ C)
¬ A
C

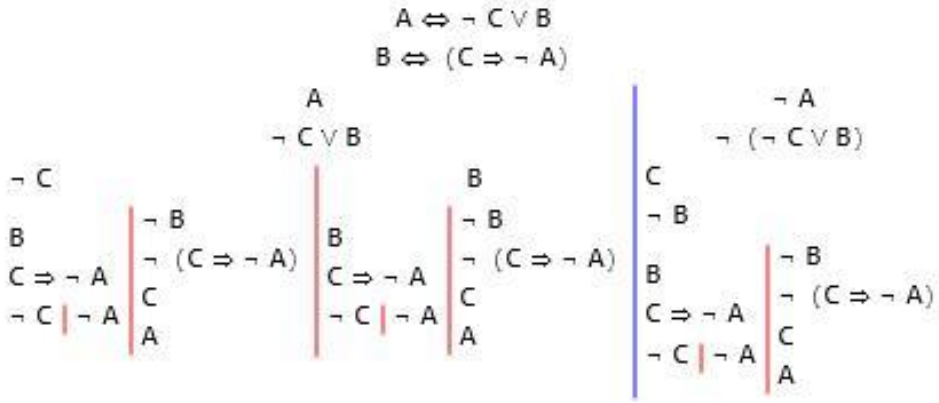
90.


A ⇔ ¬ C ∨ ¬ B
B ⇔ (C ⇒ A)
¬ C
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
A
¬ C ∨ ¬ B
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A
¬ A
¬ (¬ C ∨ ¬ B)
C
B
B
C ⇒ A
¬ C | A
¬ B
¬ (C ⇒ A)
C
¬ A

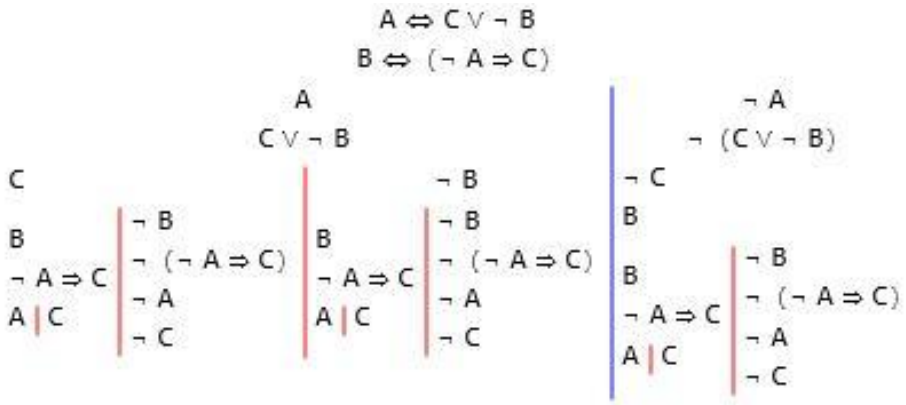
91.


A ⇔ ¬ C ∨ B
B ⇔ (A ⇒ ¬ C)
¬ C
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C
A
¬ C ∨ B
B
A ⇒ ¬ C
¬ A | ¬ C
B
¬ (A ⇒ ¬ C)
A
C
¬ A
¬ (¬ C ∨ B)
C
¬ B
B
A ⇒ ¬ C
¬ A | ¬ C
¬ B
¬ (A ⇒ ¬ C)
A
C

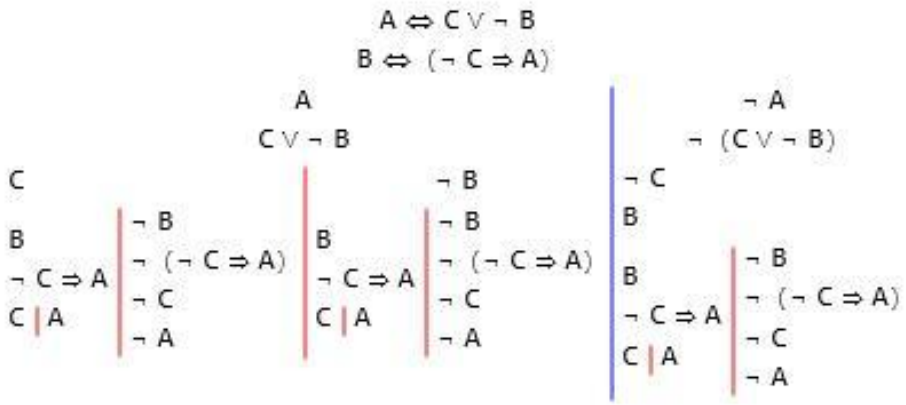
92.


A ⇔ ¬ C ∨ B
B ⇔ (C ⇒ ¬ A)
¬ C
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A
A
¬ C ∨ B
B
C ⇒ ¬ A
¬ C | ¬ A
B
¬ (C ⇒ ¬ A)
C
A
¬ A
¬ (¬ C ∨ B)
C
¬ B
B
C ⇒ ¬ A
¬ C | ¬ A
¬ B
¬ (C ⇒ ¬ A)
C
A

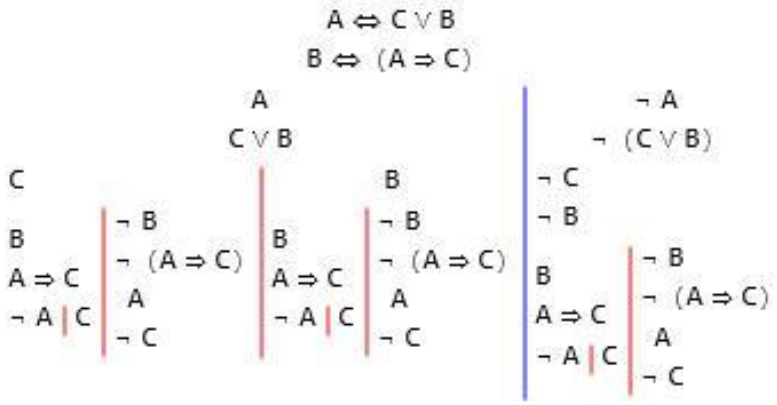
93.


A ⇔ C ∨ ¬ B
B ⇔ (¬ A ⇒ C)
A
C ∨ ¬ B
C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C
¬ A
¬ (C ∨ ¬ B)
¬ C
B
B
¬ A ⇒ C
A | C
¬ B
¬ (¬ A ⇒ C)
¬ A
¬ C

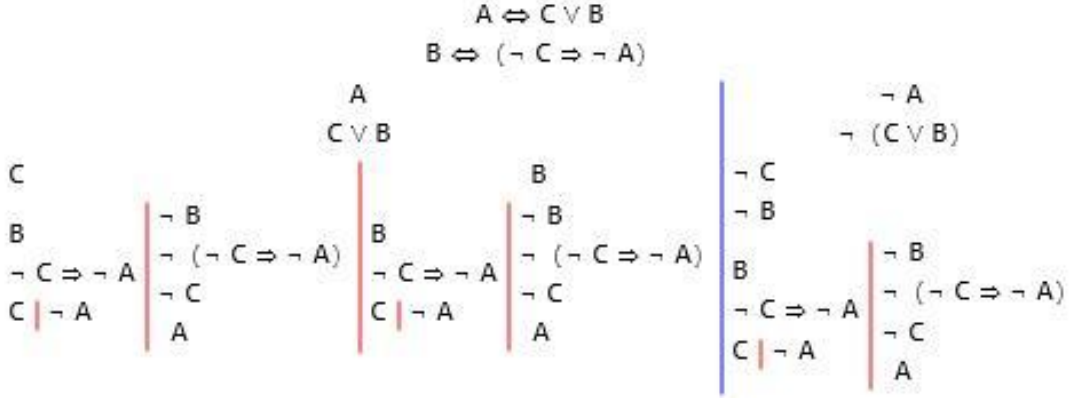
94.


A ⇔ C ∨ ¬ B
B ⇔ (¬ C ⇒ A)
A
C ∨ ¬ B
C
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A
¬ A
¬ (C ∨ ¬ B)
¬ C
B
B
¬ C ⇒ A
C | A
¬ B
¬ (¬ C ⇒ A)
¬ C
¬ A

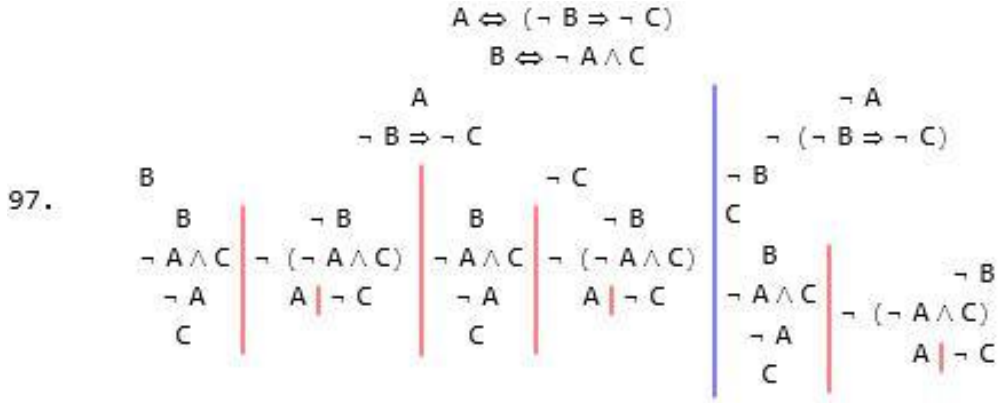
95.


A ⇔ C ∨ B
B ⇔ (A ⇒ C)
A
C ∨ B
C
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C
¬ A
¬ (C ∨ B)
¬ C
¬ B
B
A ⇒ C
¬ A | C
¬ B
¬ (A ⇒ C)
A
¬ C

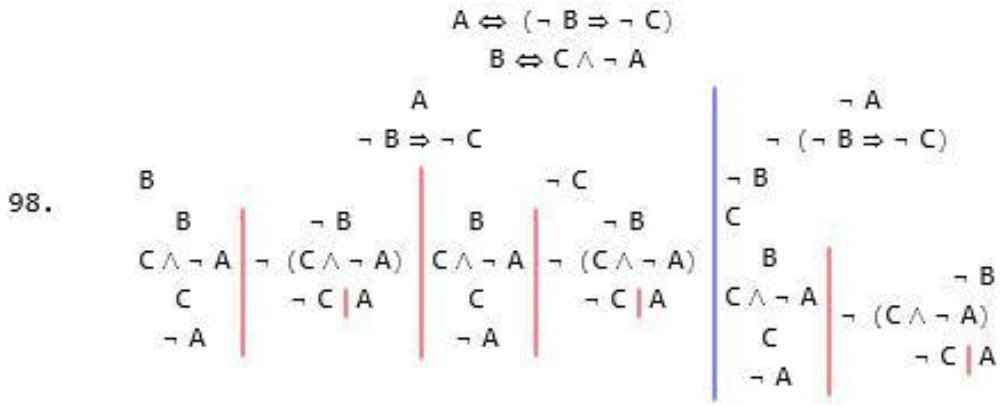
96.


A ⇔ C ∨ B
B ⇔ (¬ C ⇒ ¬ A)
A
C ∨ B
C
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A
¬ A
¬ (C ∨ B)
¬ C
¬ B
B
¬ C ⇒ ¬ A
C | ¬ A
¬ B
¬ (¬ C ⇒ ¬ A)
¬ C
A

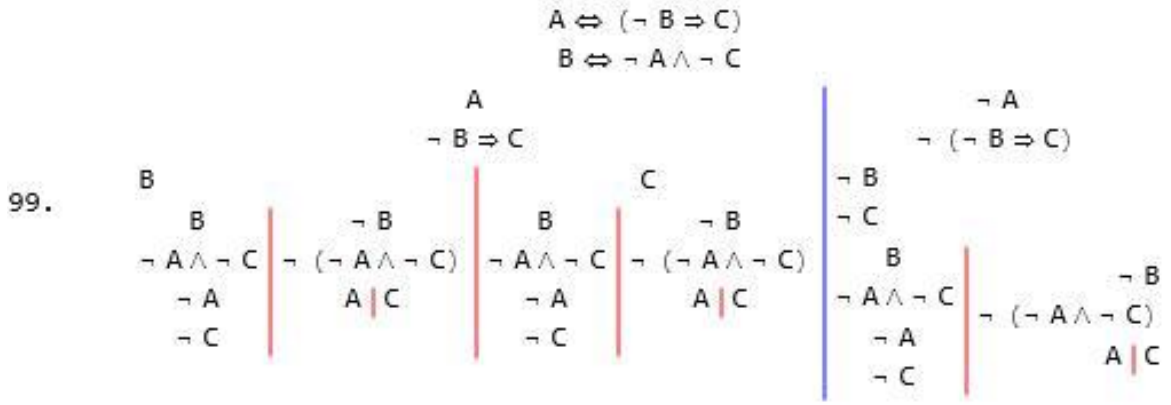
97.


A ⇔ (¬ B ⇒ ¬ C)
B ⇔ ¬ A ∧ C
A
¬ B ⇒ ¬ C
¬ A
¬ (¬ B ⇒ ¬ C)
B
¬ B
C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
¬ C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C
B
¬ A ∧ C
¬ A
C
¬ B
¬ (¬ A ∧ C)
A | ¬ C

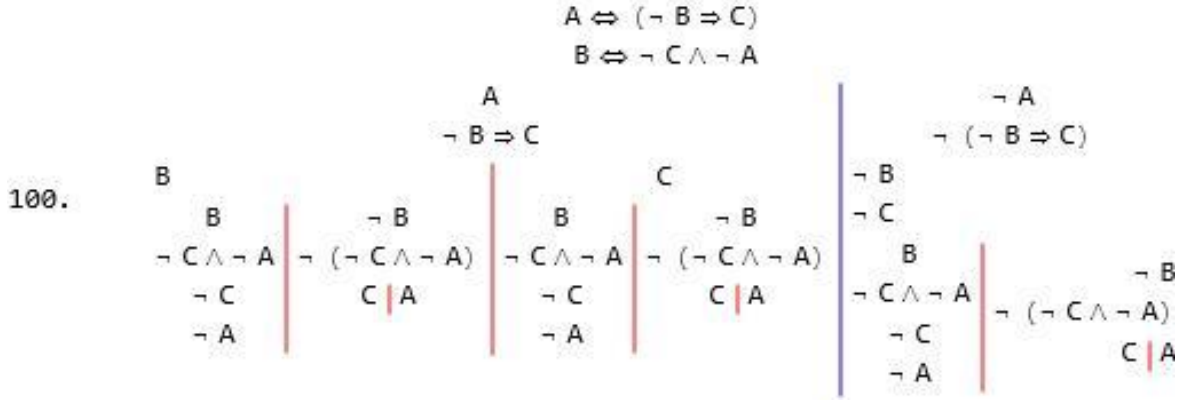
98.


A ⇔ (¬ B ⇒ ¬ C)
B ⇔ C ∧ ¬ A
A
¬ B ⇒ ¬ C
¬ A
¬ (¬ B ⇒ ¬ C)
B
¬ B
C
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
¬ C
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A
B
C ∧ ¬ A
C
¬ A
¬ B
¬ (C ∧ ¬ A)
¬ C | A

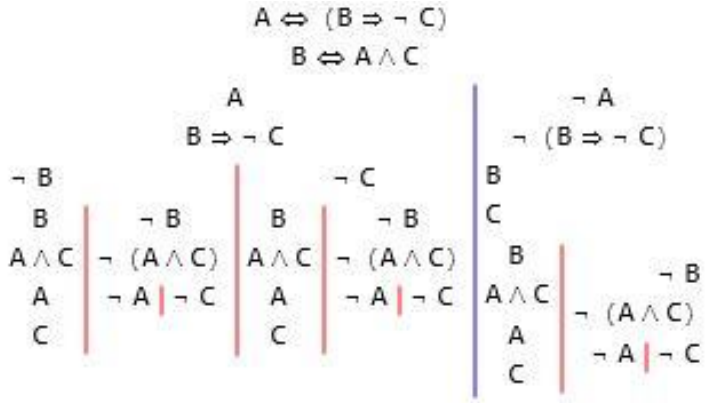
99.


A ⇔ (¬ B ⇒ C)
B ⇔ ¬ A ∧ ¬ C
A
¬ B ⇒ C
¬ A
¬ (¬ B ⇒ C)
B
¬ B
C
¬ B
¬ C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C
B
¬ A ∧ ¬ C
¬ A
¬ C
¬ B
¬ (¬ A ∧ ¬ C)
A | C

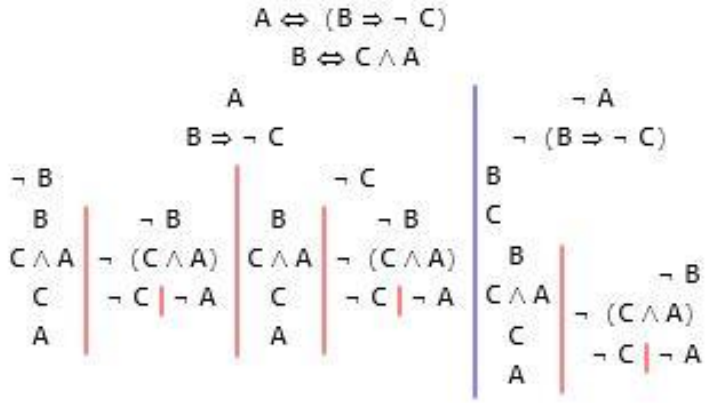
100.


A ⇔ (¬ B ⇒ C)
B ⇔ ¬ C ∧ ¬ A
A
¬ B ⇒ C
¬ A
¬ (¬ B ⇒ C)
B
¬ B
C
¬ B
¬ C
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
C
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A
B
¬ C ∧ ¬ A
¬ C
¬ A
¬ B
¬ (¬ C ∧ ¬ A)
C | A

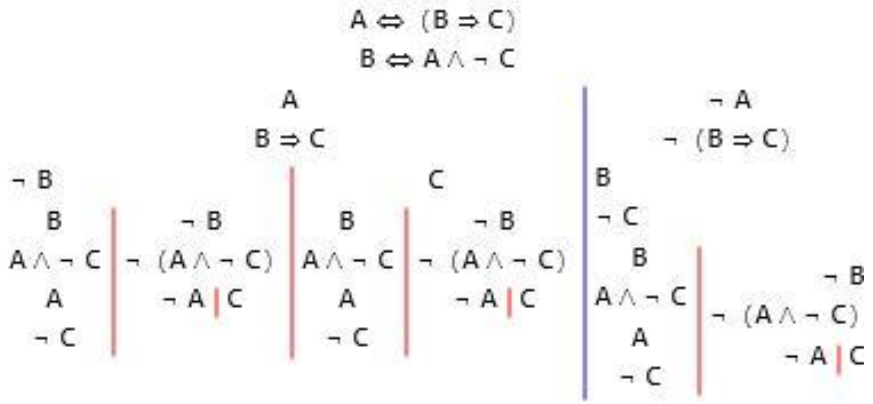
101.



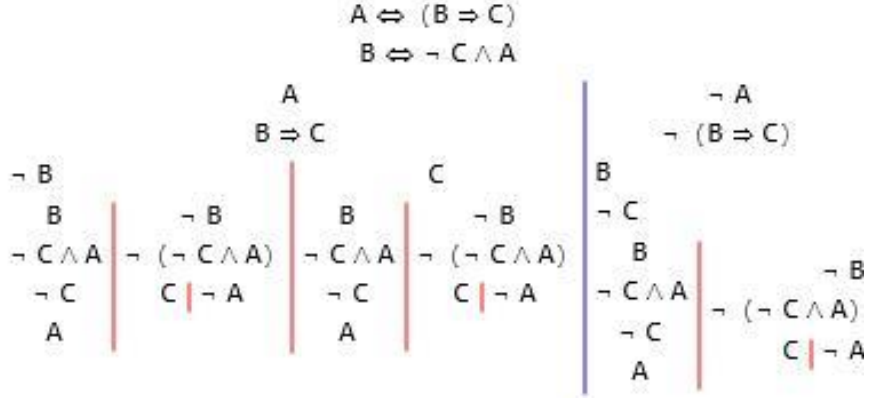
102.



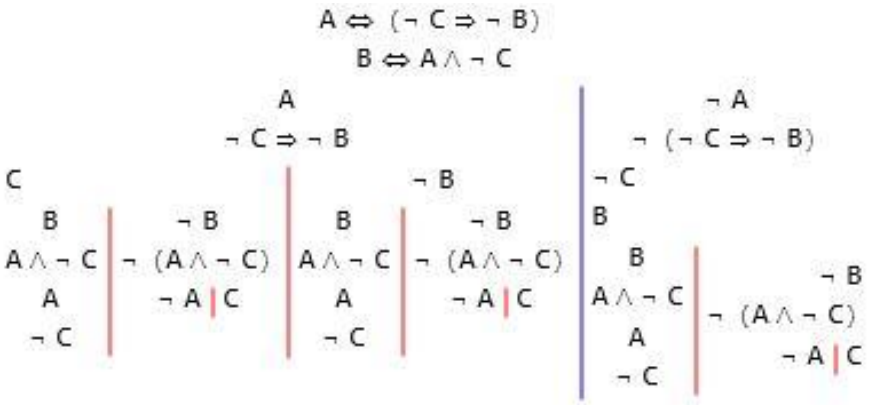
103.



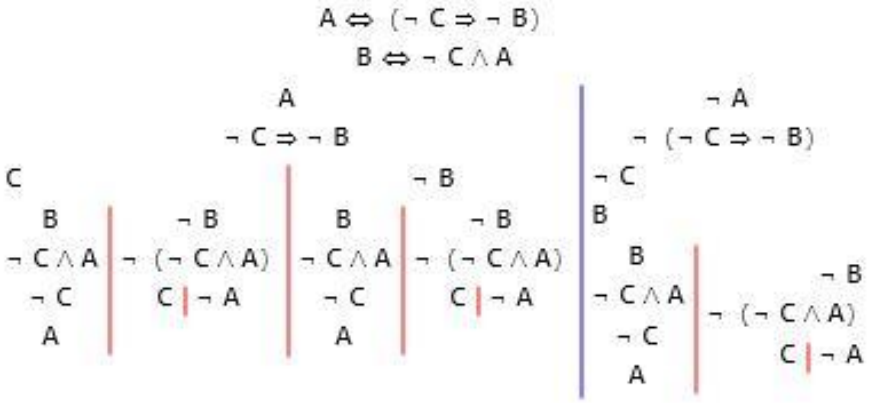
104.



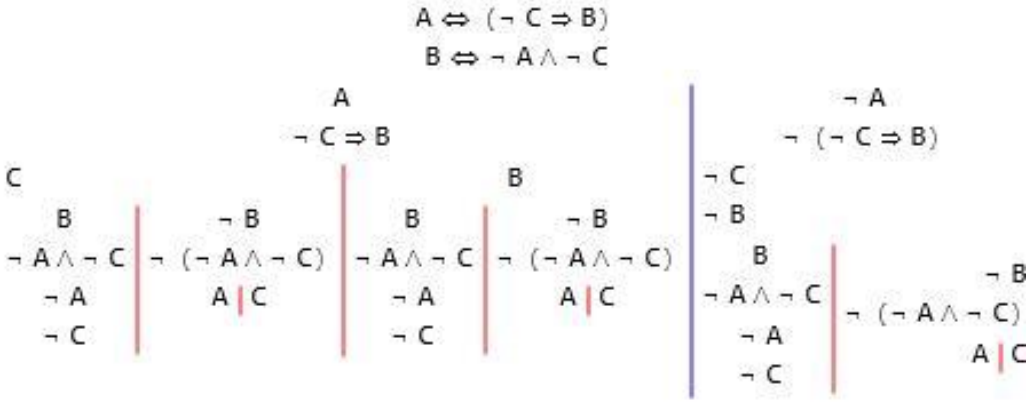
105.



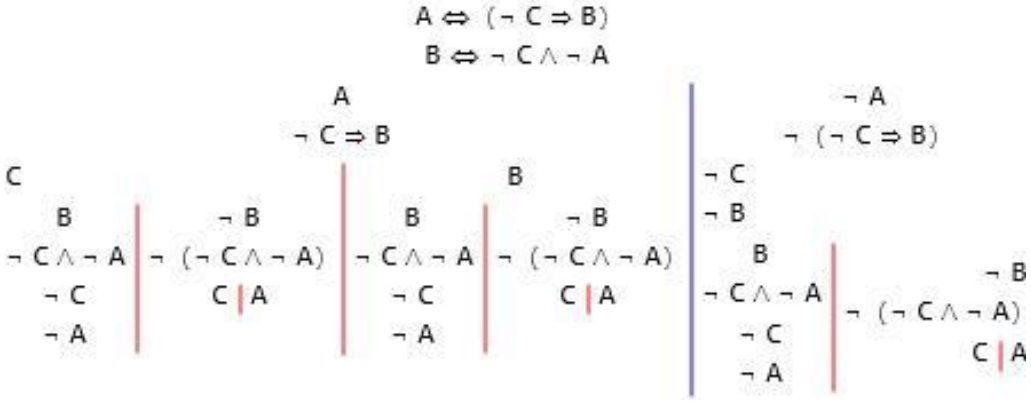
106.



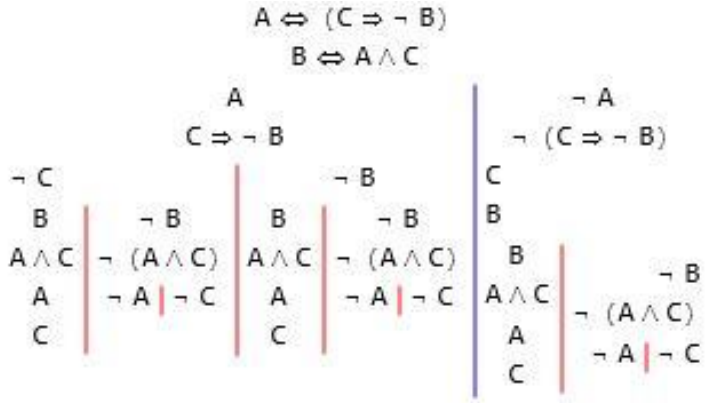
107.



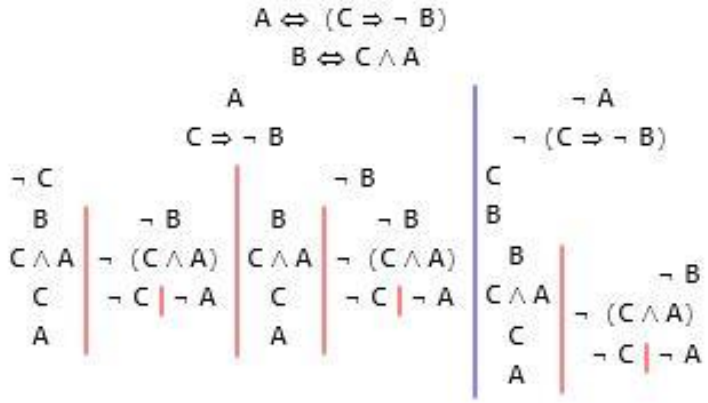
108.



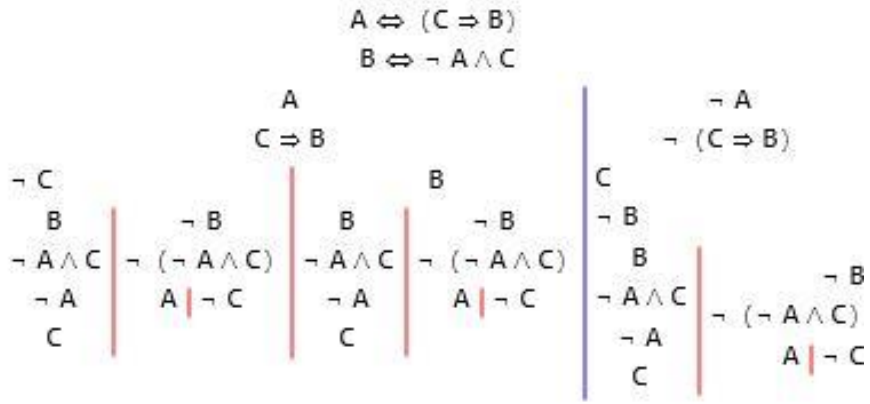
109.



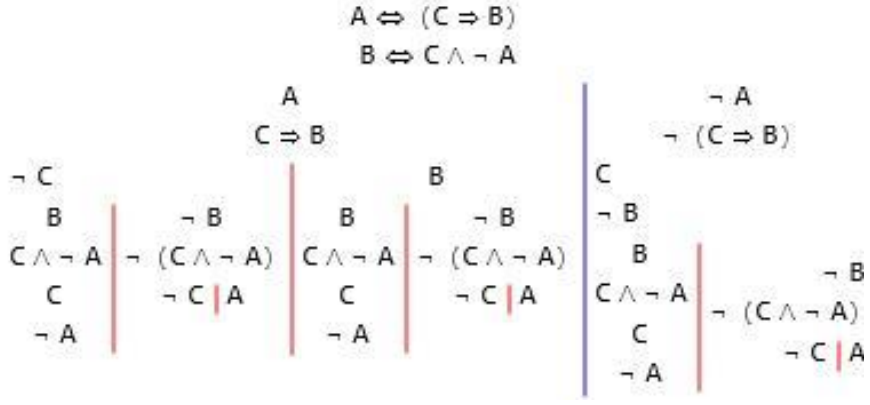
110.



111.

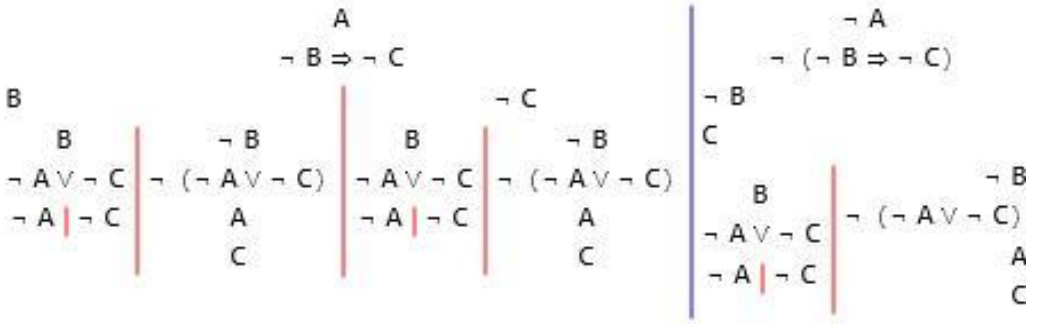


112.



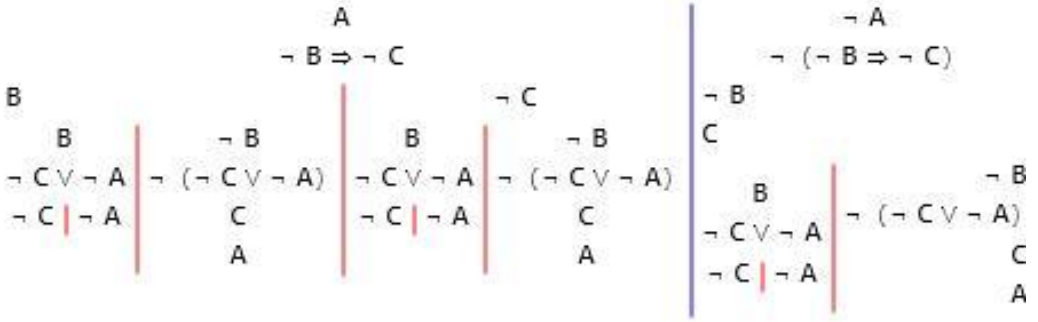
113.

$A \Leftrightarrow (\neg B \Rightarrow \neg C)$
$B \Leftrightarrow \neg A \vee \neg C$



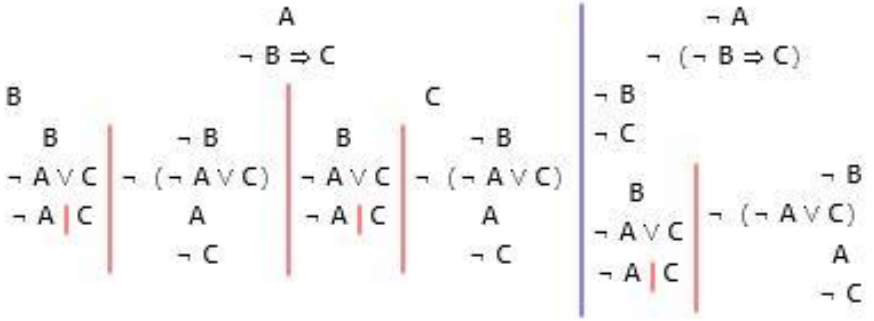
114.

$A \Leftrightarrow (\neg B \Rightarrow \neg C)$
$B \Leftrightarrow \neg C \vee \neg A$



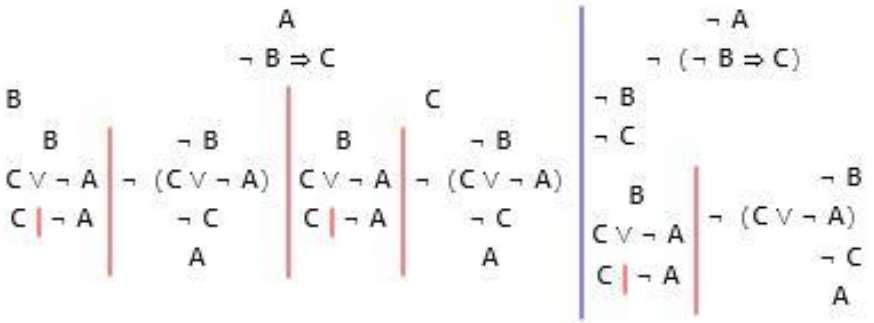
115.

$A \Leftrightarrow (\neg B \Rightarrow C)$
$B \Leftrightarrow \neg A \vee C$

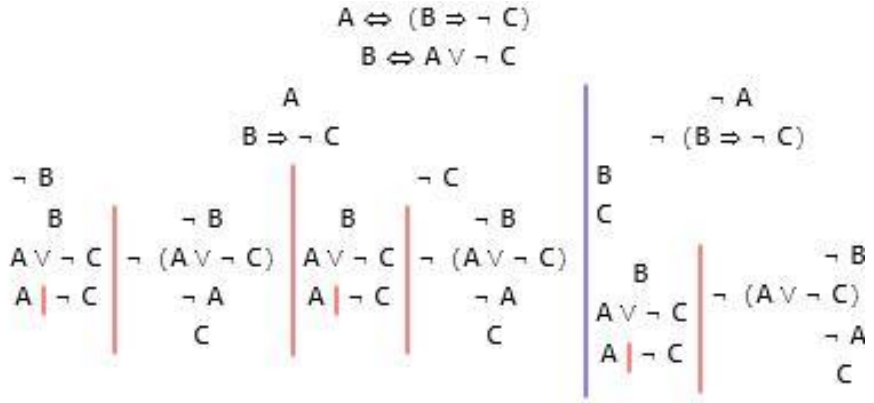


116.

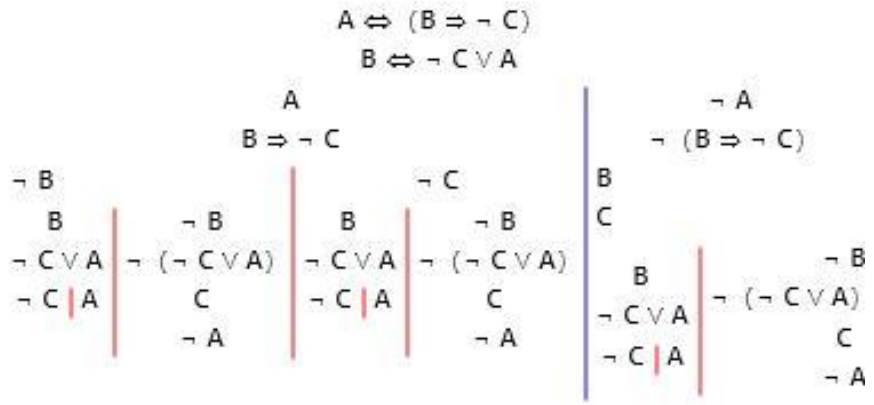
$A \Leftrightarrow (\neg B \Rightarrow C)$
$B \Leftrightarrow C \vee \neg A$



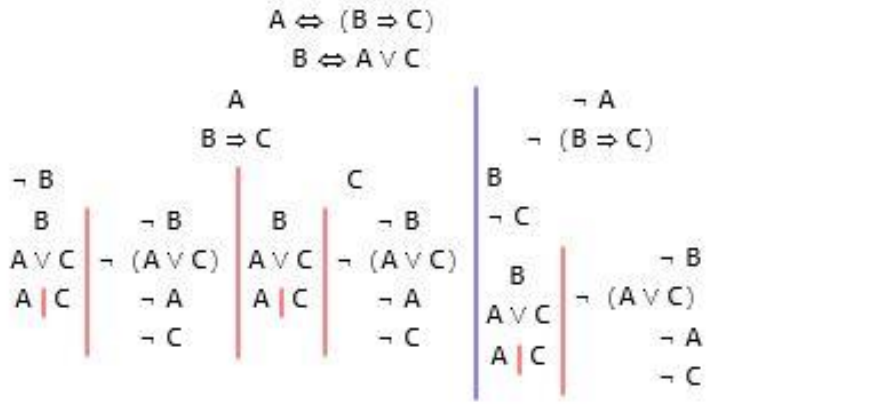
117.



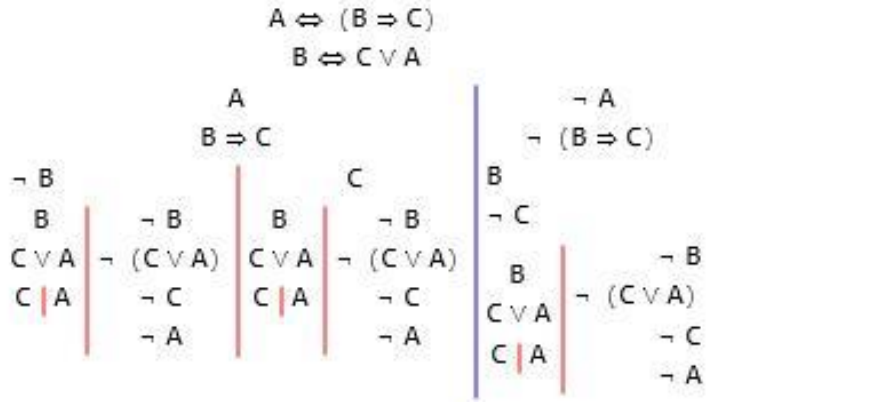
118.



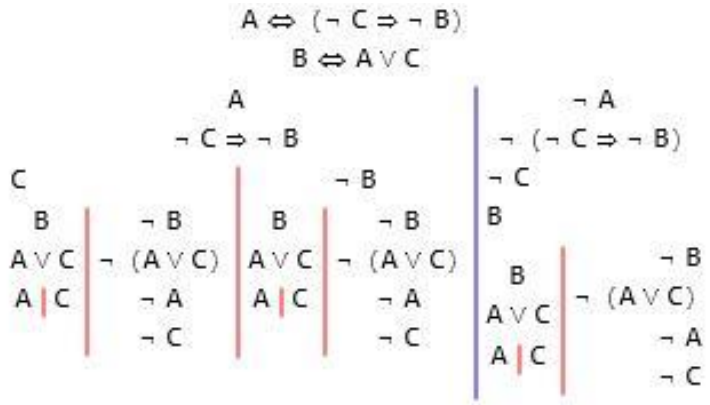
119.



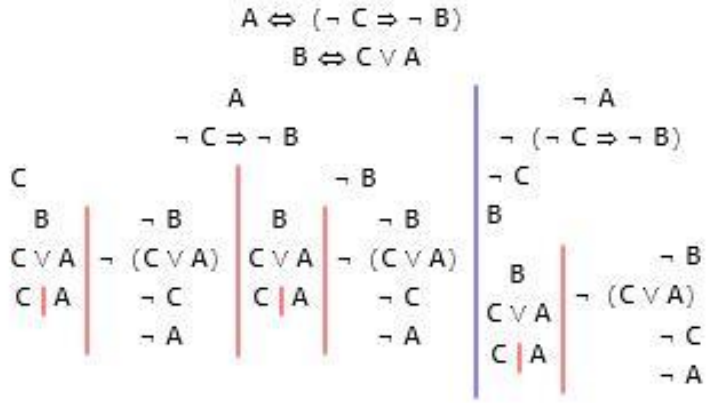
120.



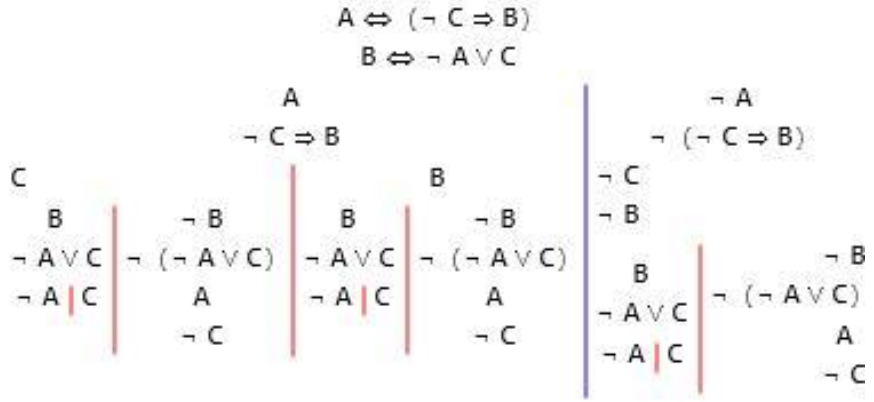
121.



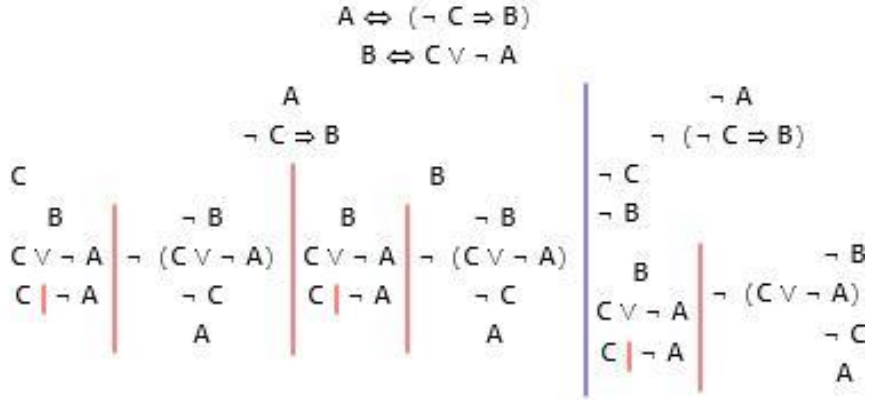
122.



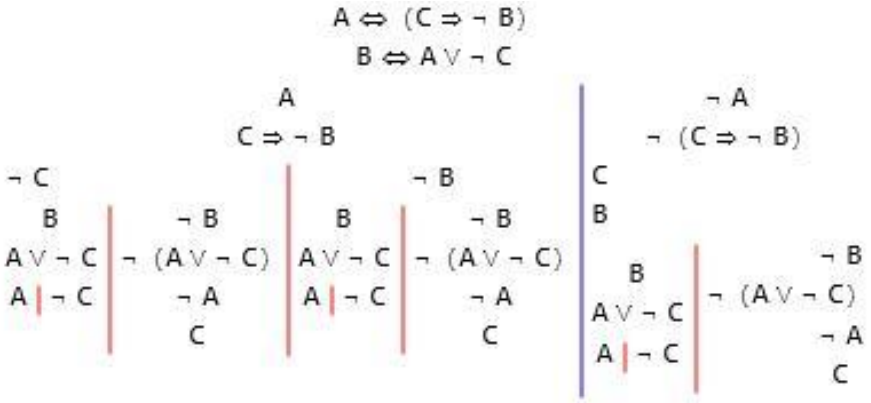
123.



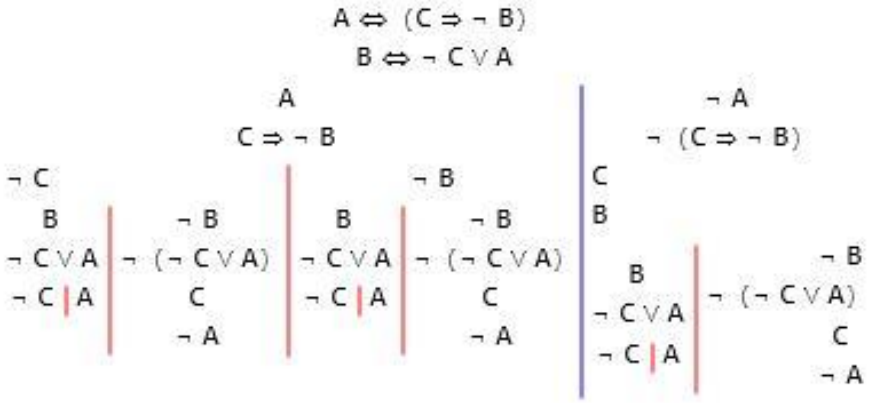
124.



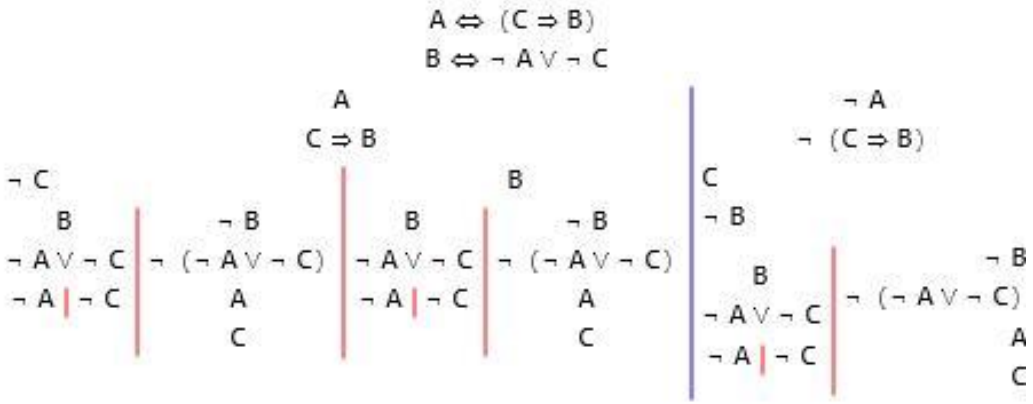
125.



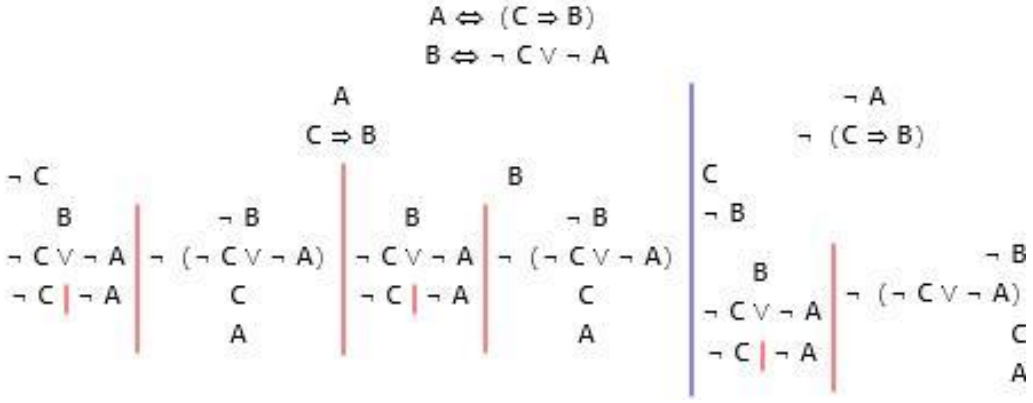
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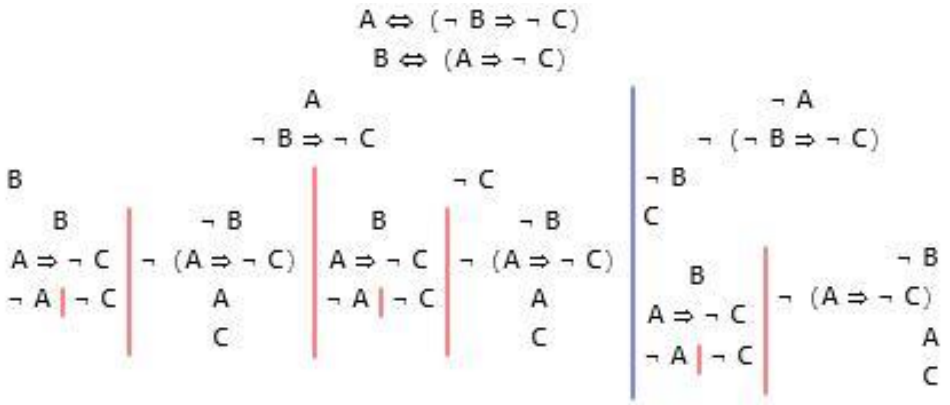
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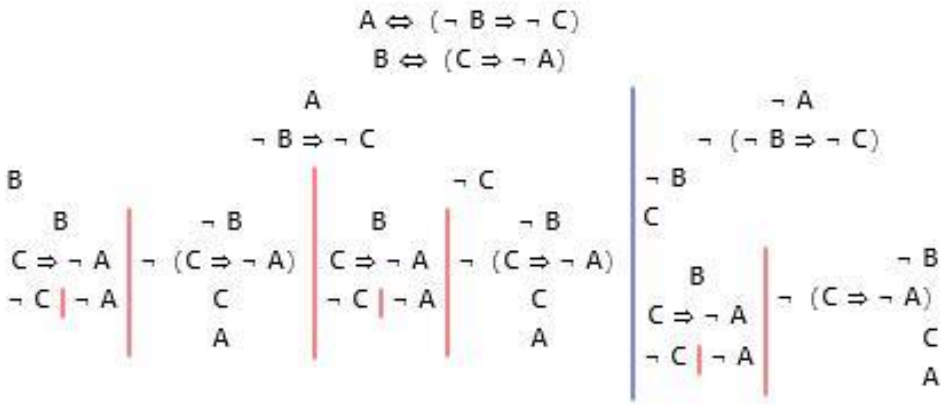
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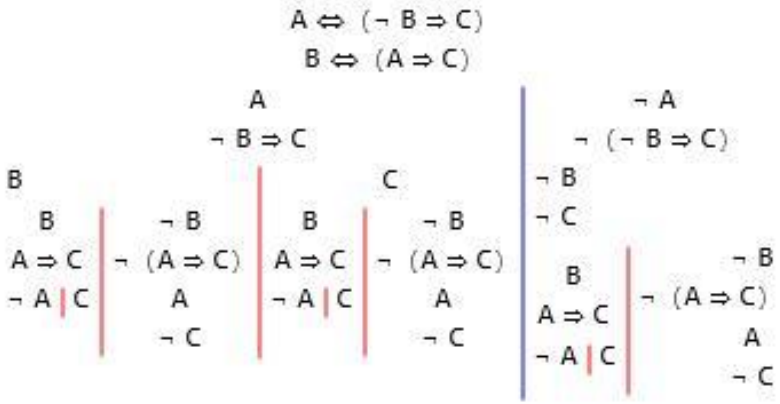
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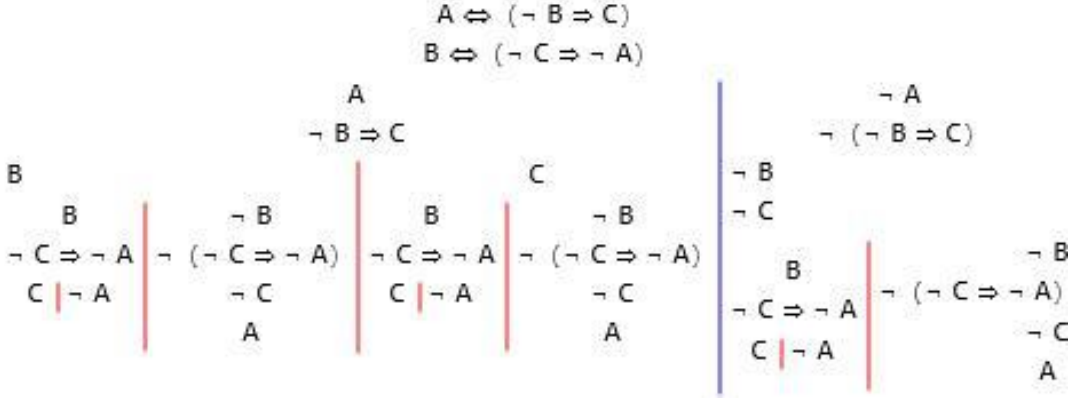
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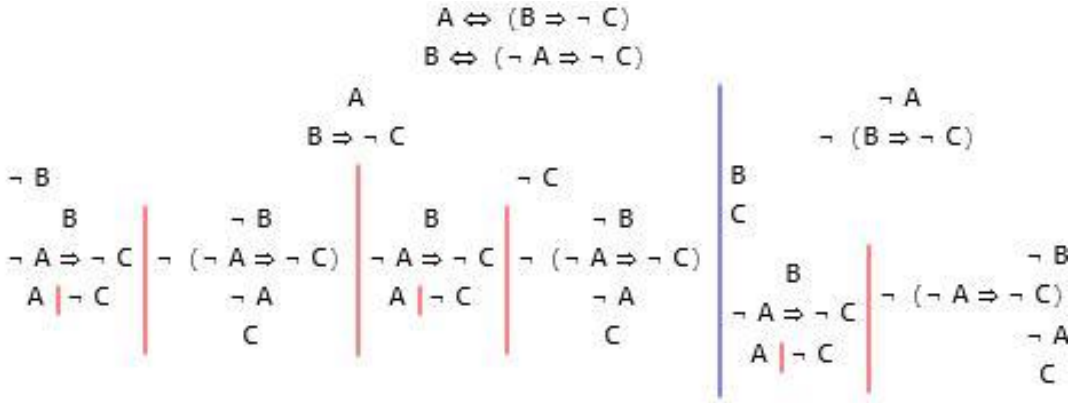
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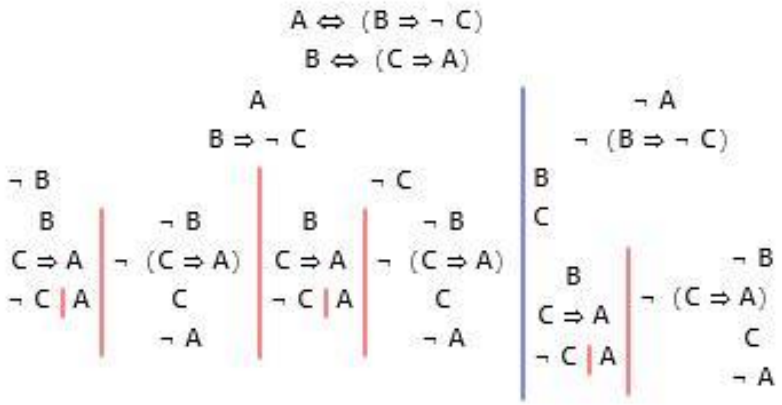
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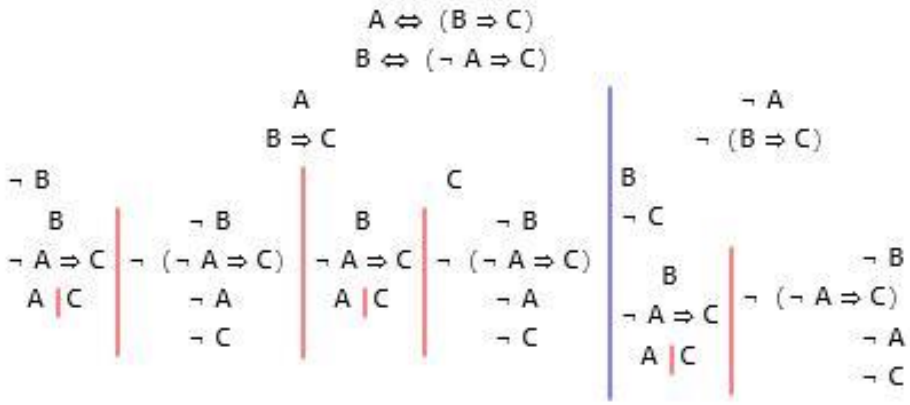
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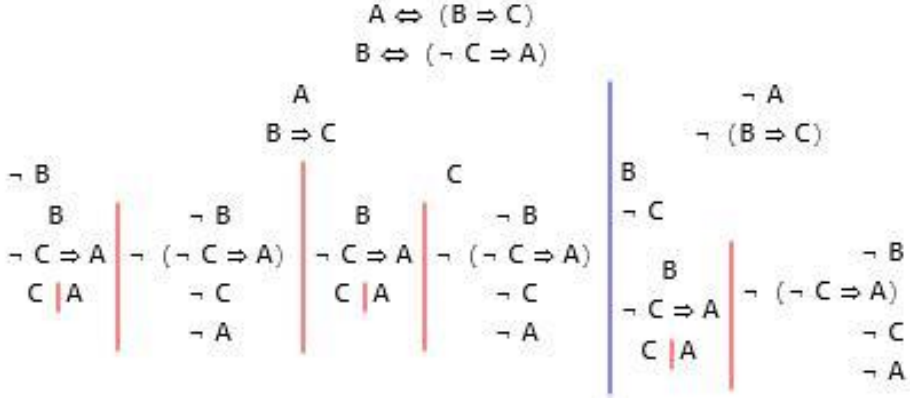
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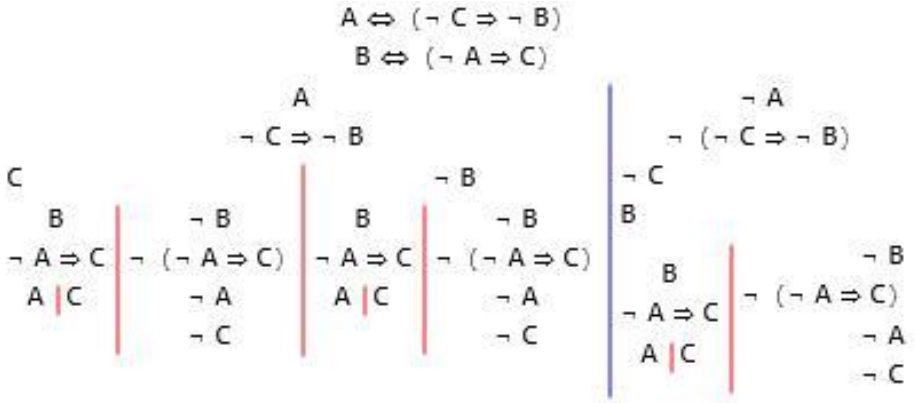
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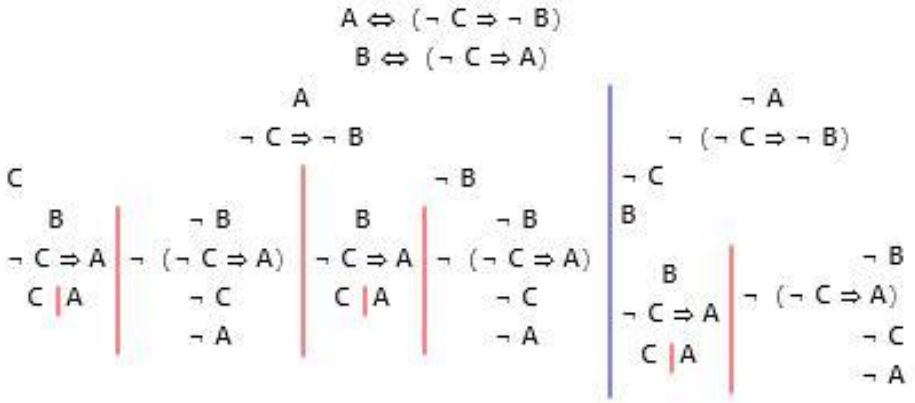
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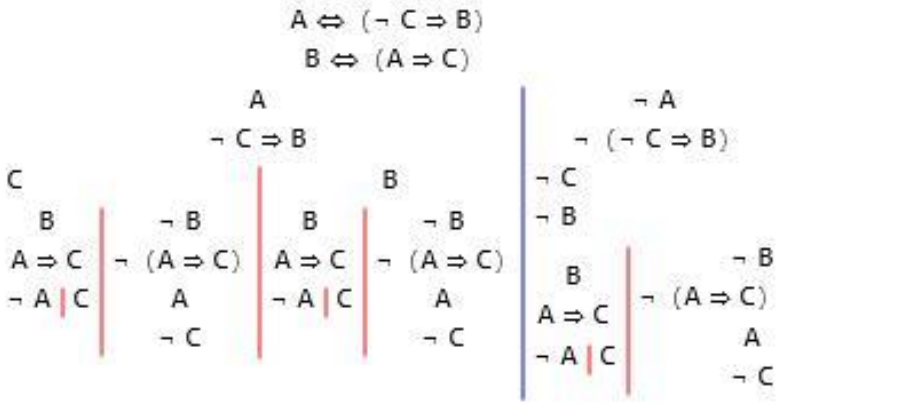
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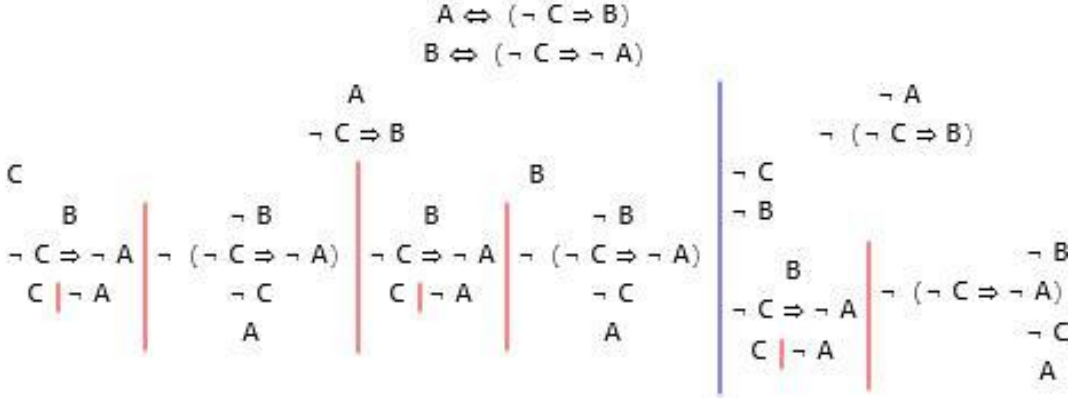
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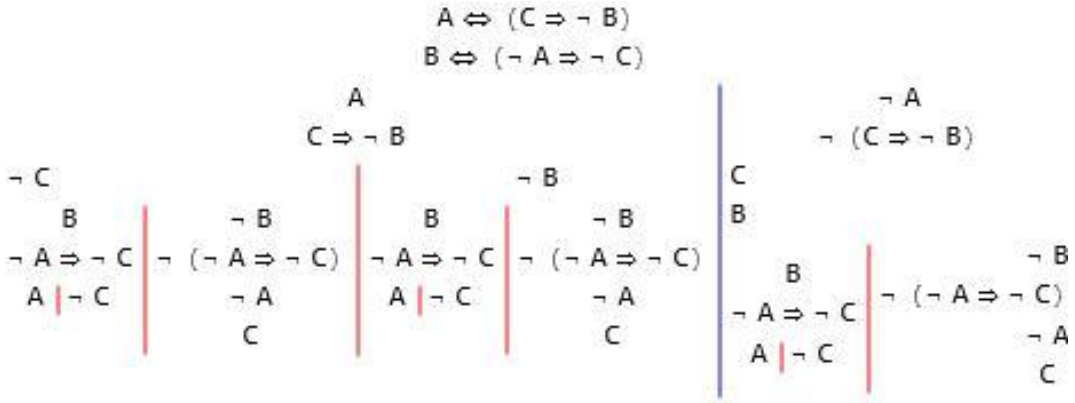
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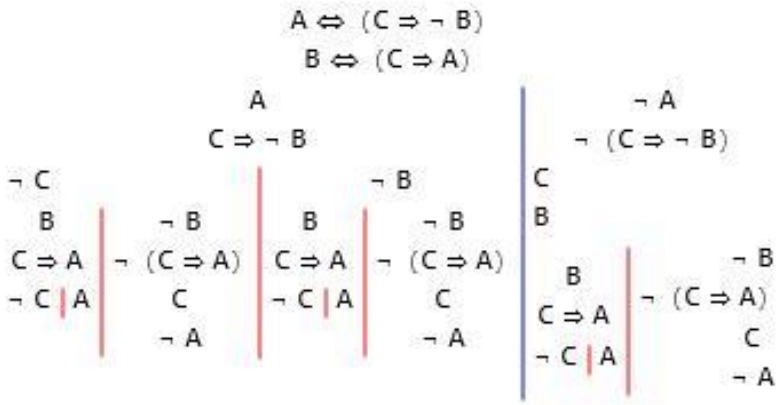
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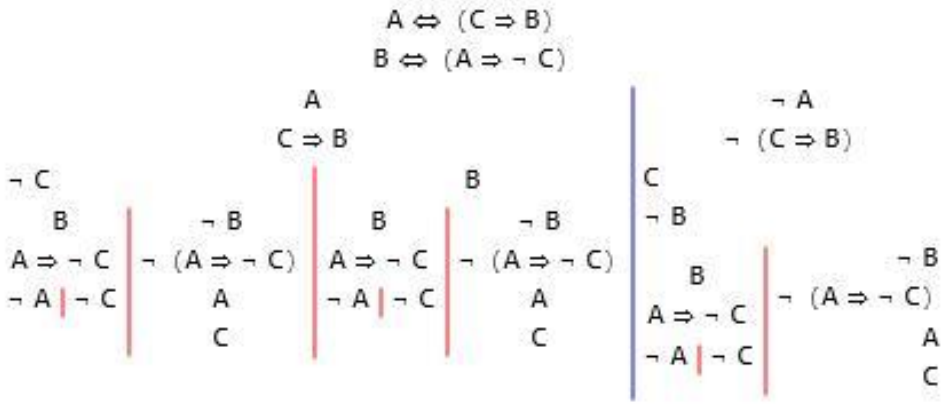
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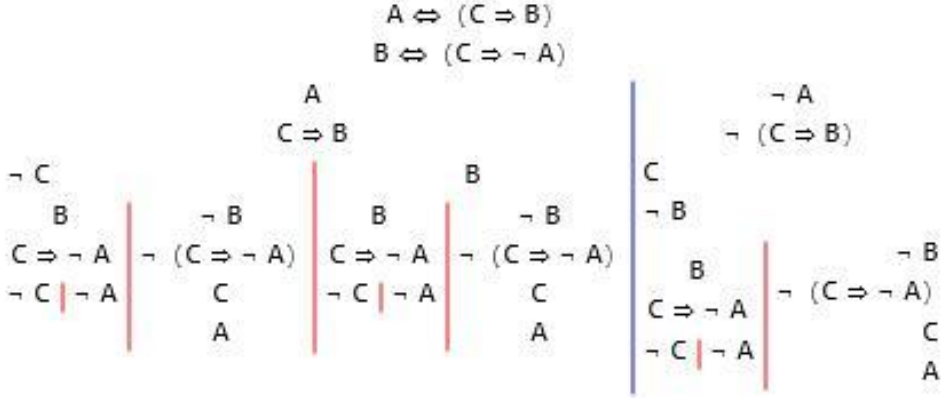
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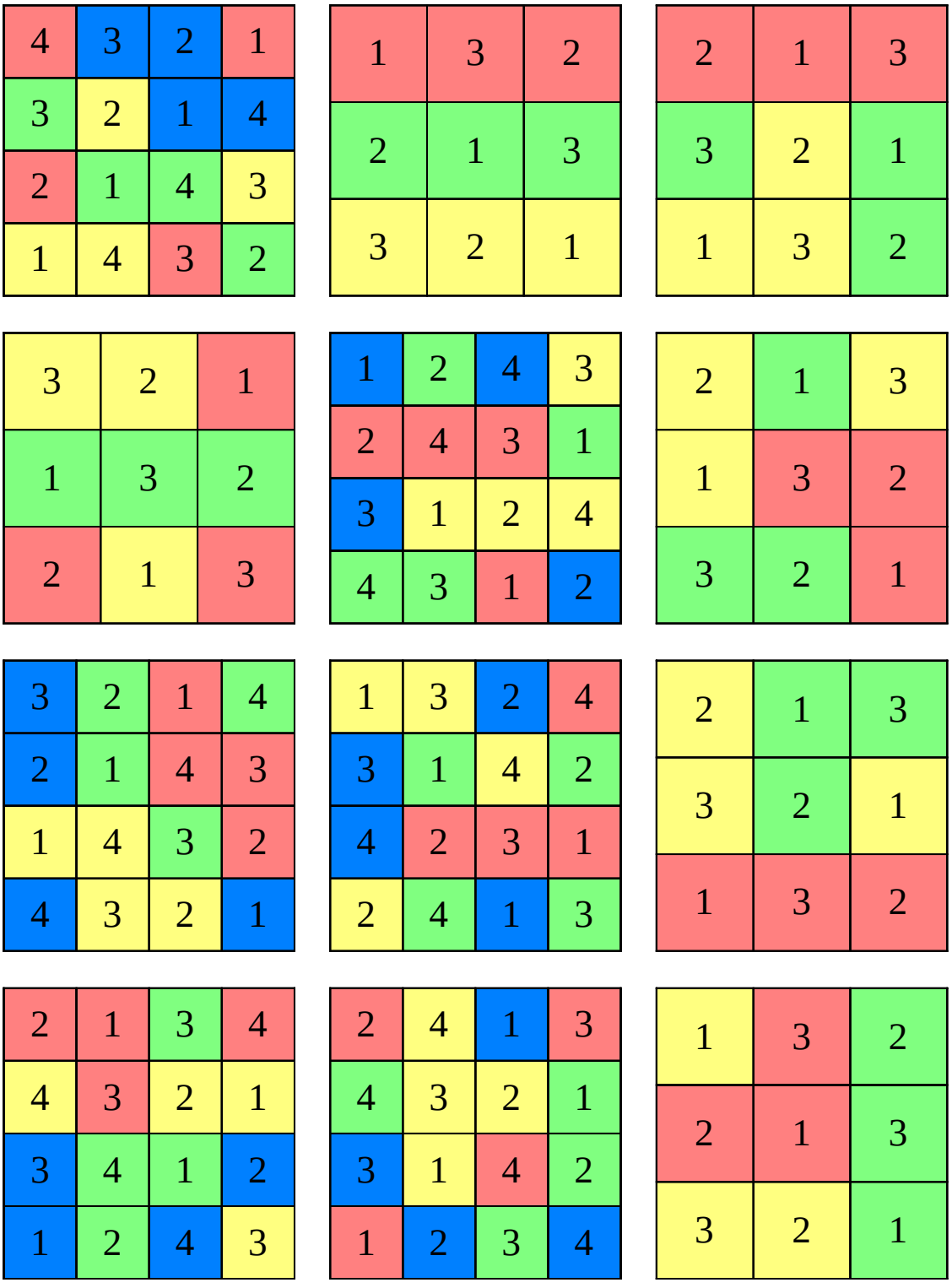
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Rešitve

Barvni sudoku

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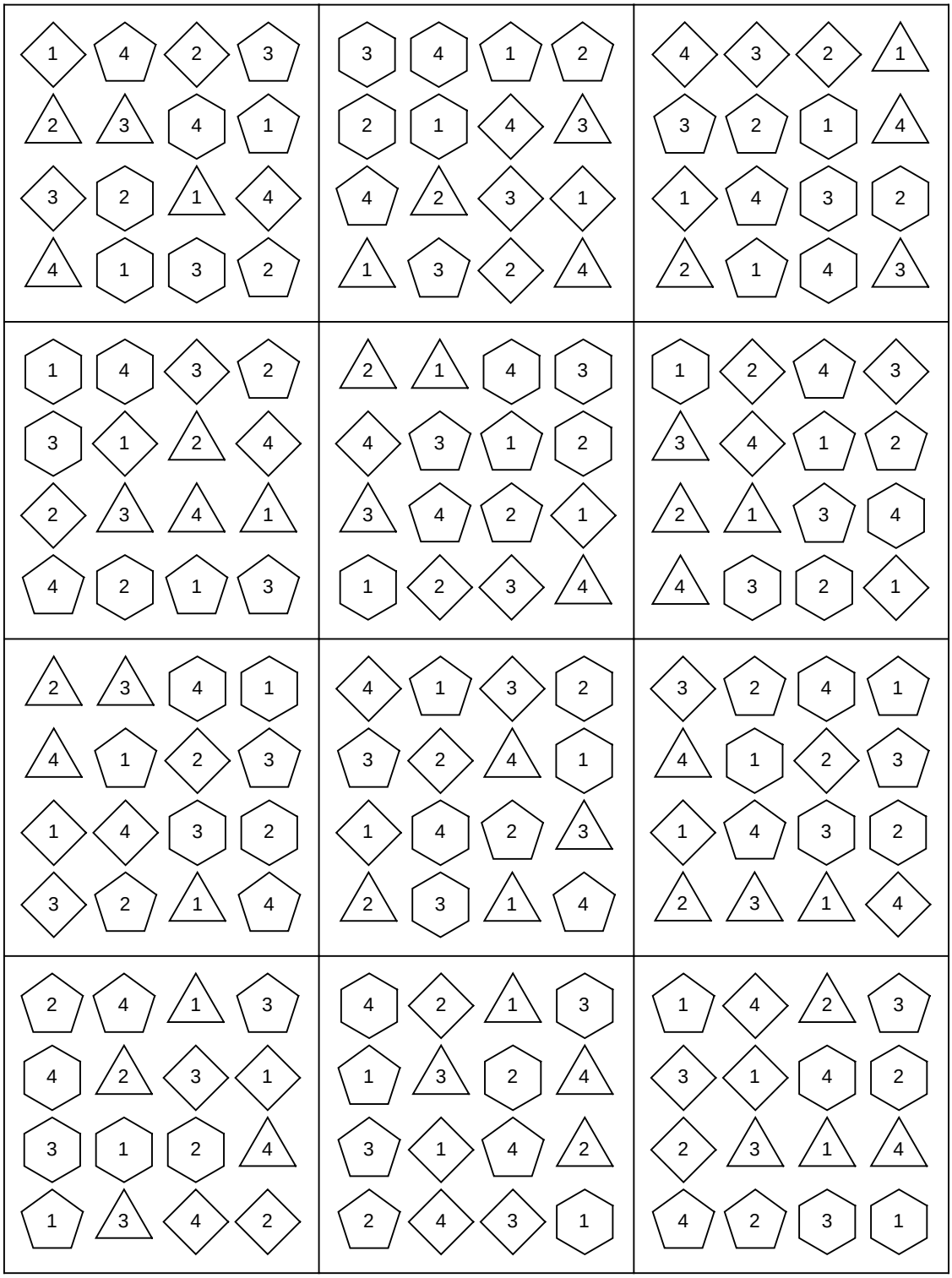
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Sudoku z večkotniki



Latinski kvadrati

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D	C	E	B	A
C	A	D	E	B
A	B	C	D	E

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D	A	E	B	C

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D	B	A	C

Sudoku s črkami

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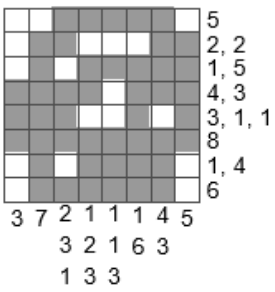
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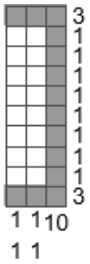
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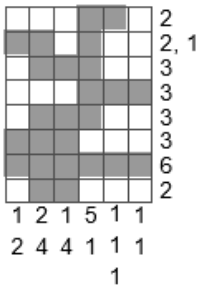
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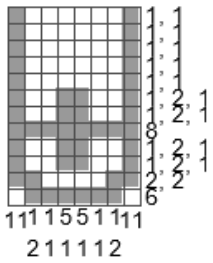
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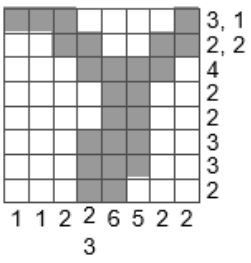


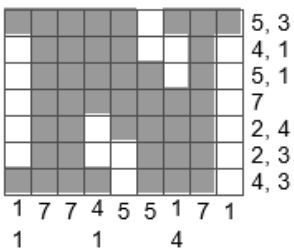


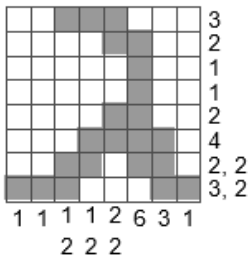


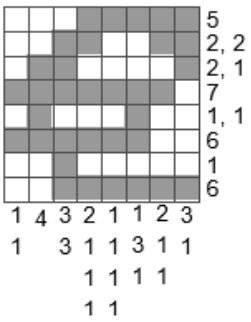


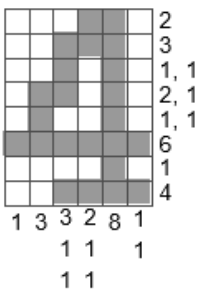


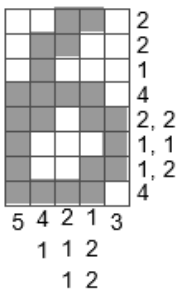


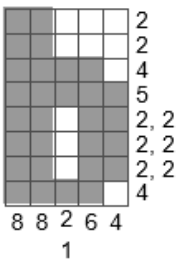




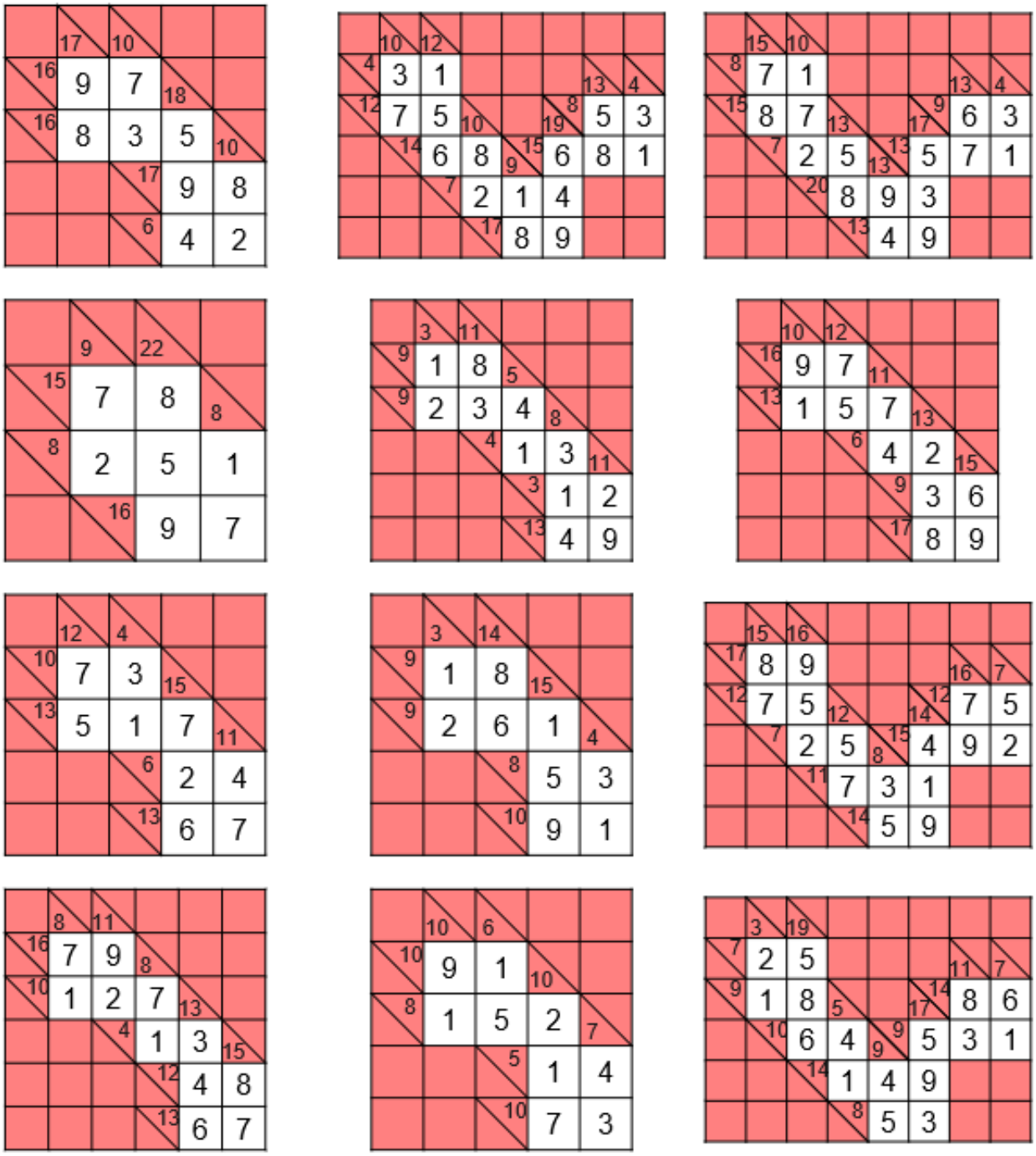




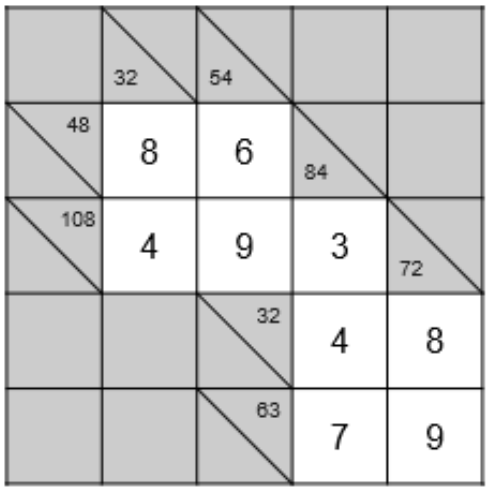


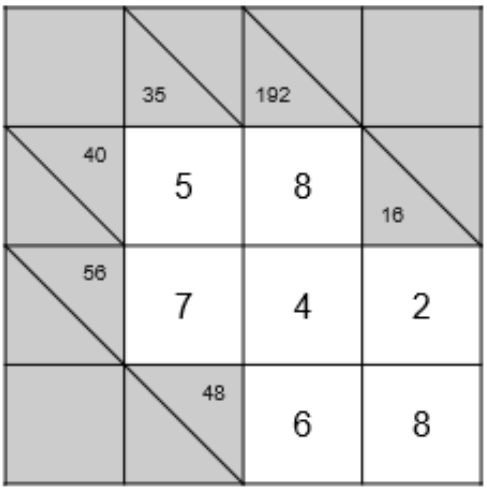


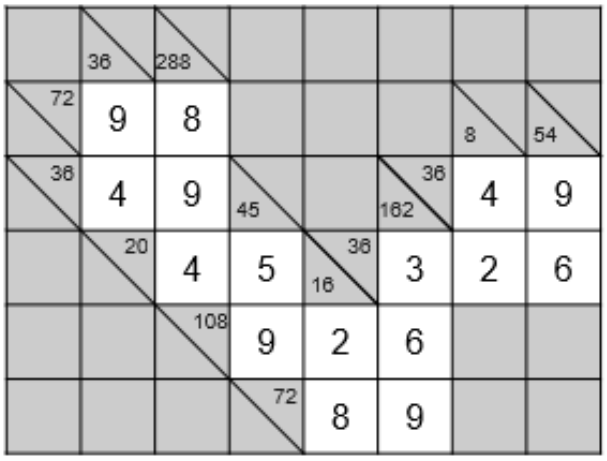
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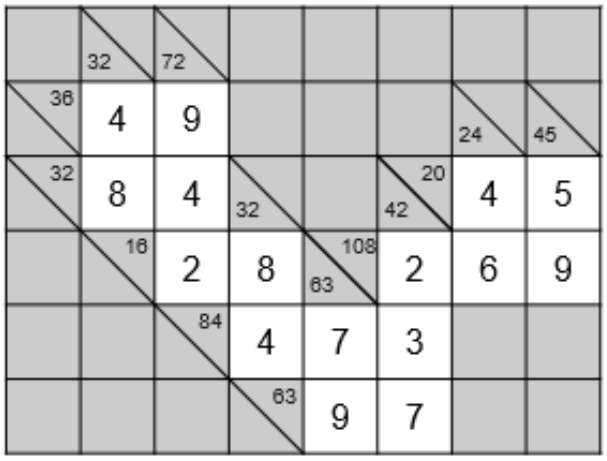


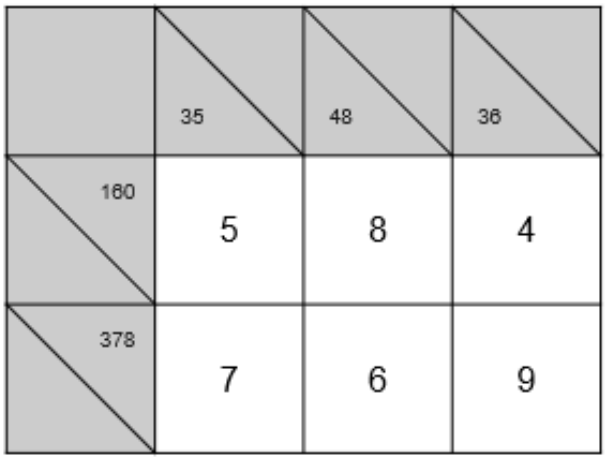
Križni produkti

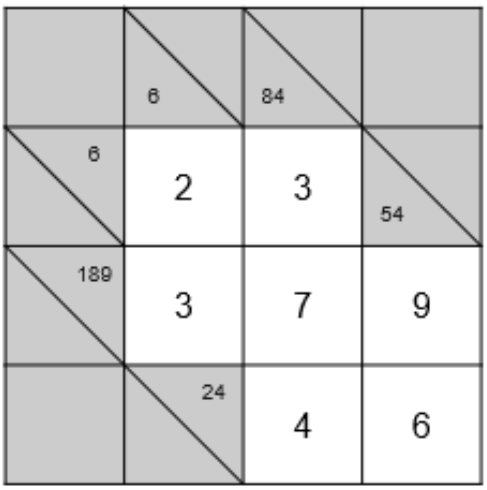




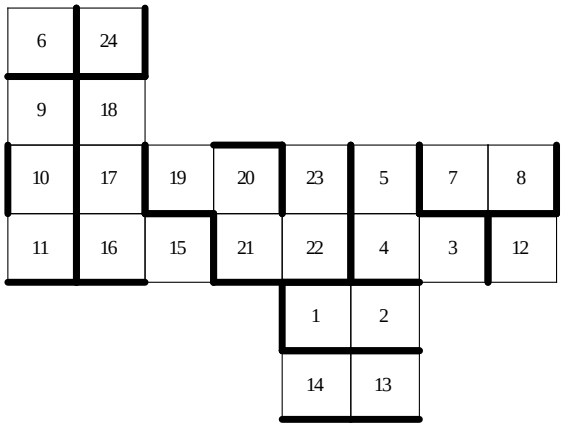


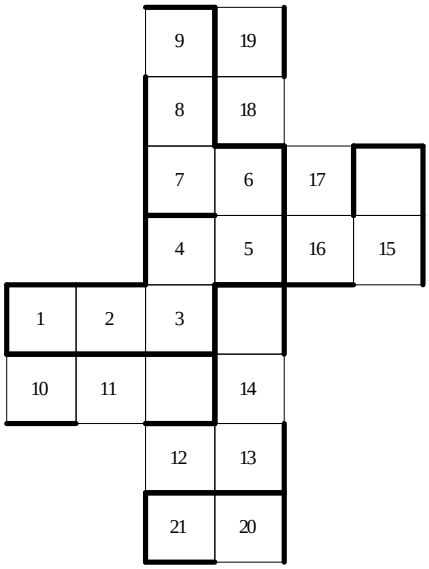


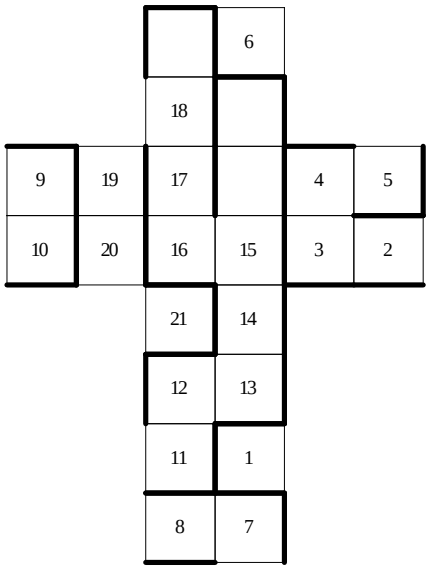


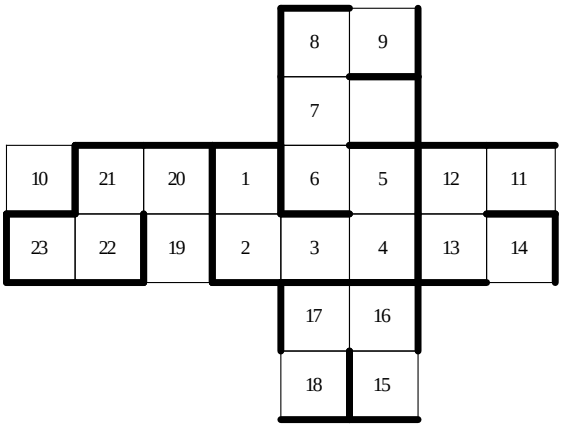


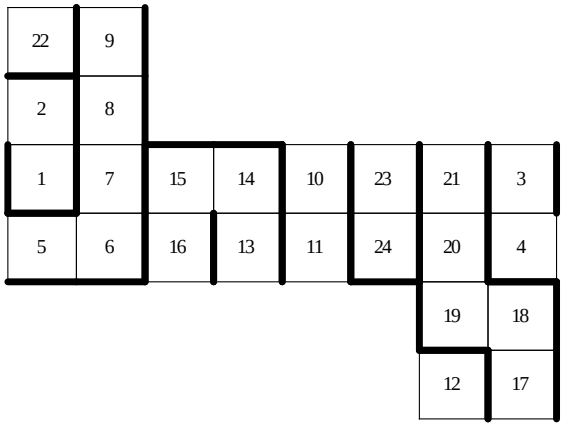
Labirint na kocki

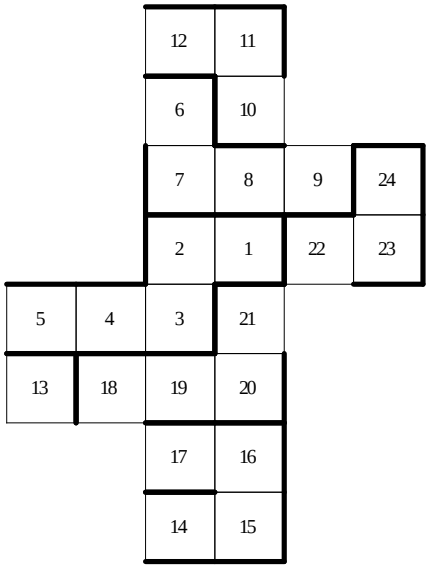




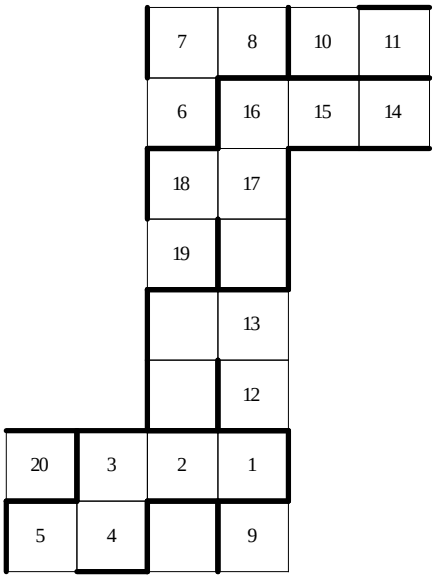


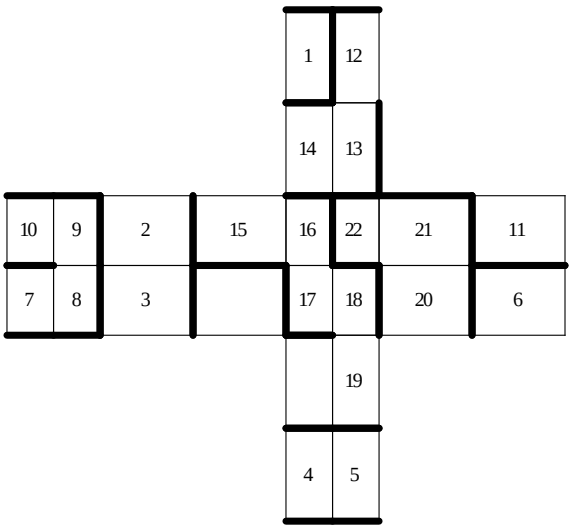


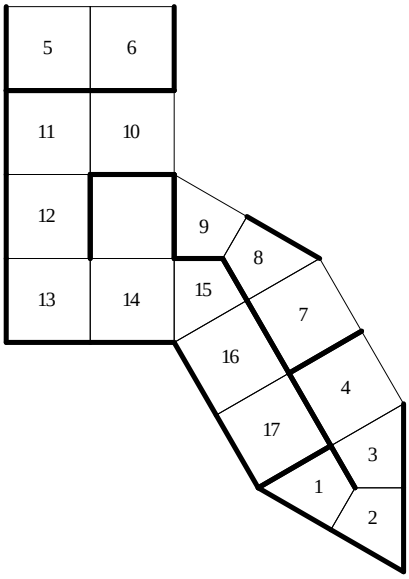


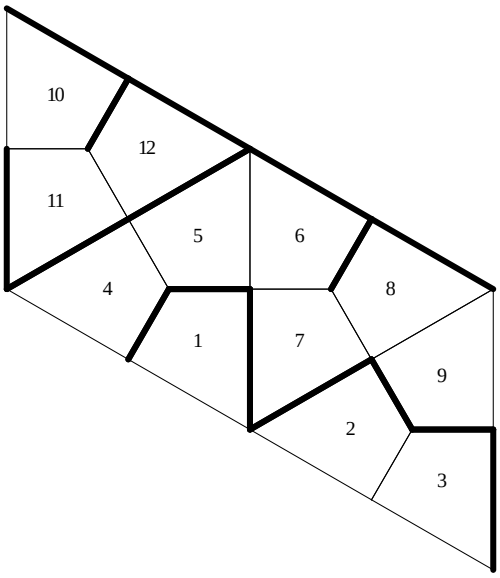


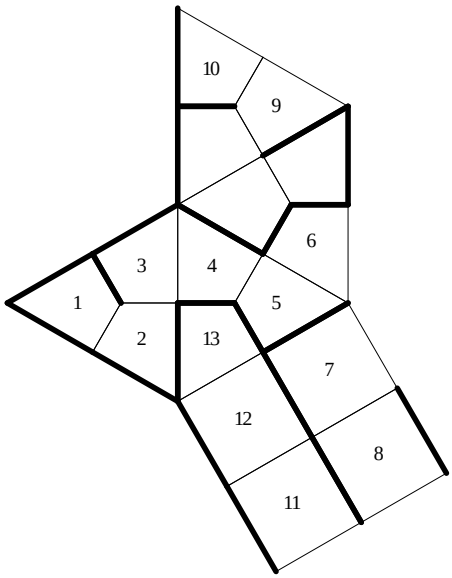
Labirinti na enostavnih poliedrih

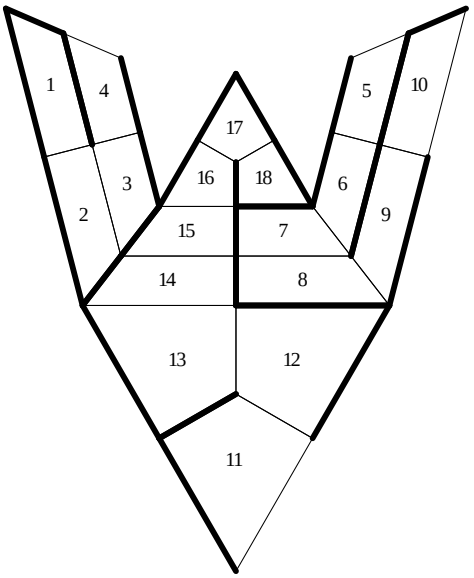






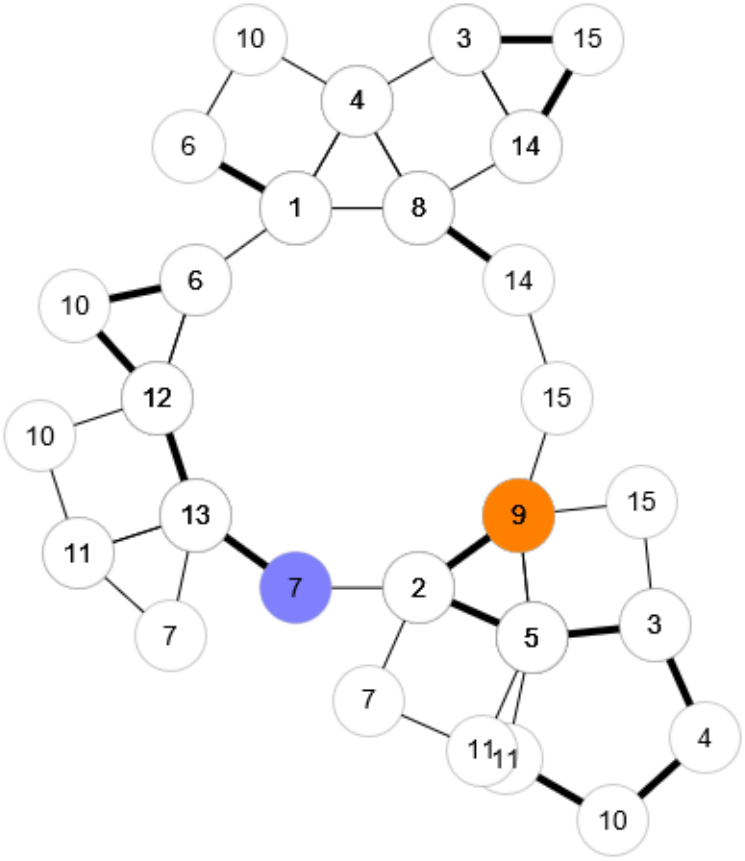






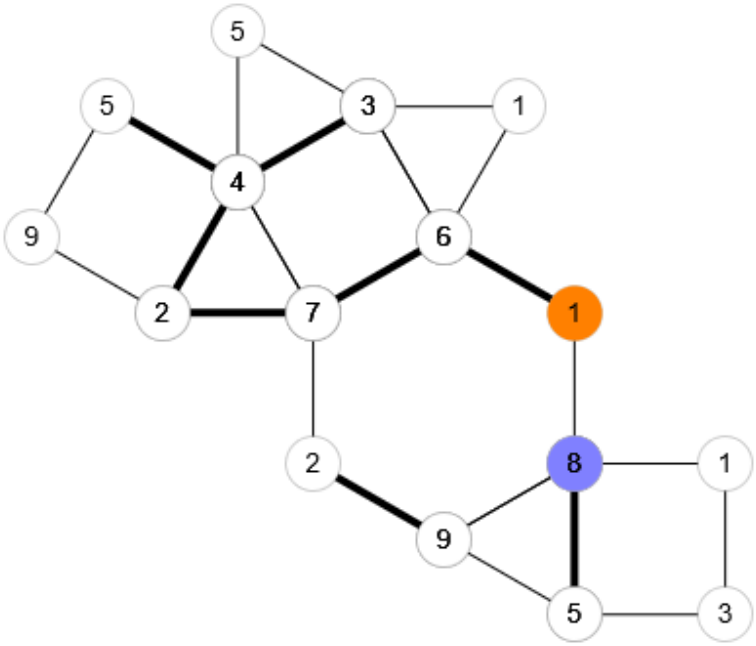
Labirinti na robovih poliedra

1.



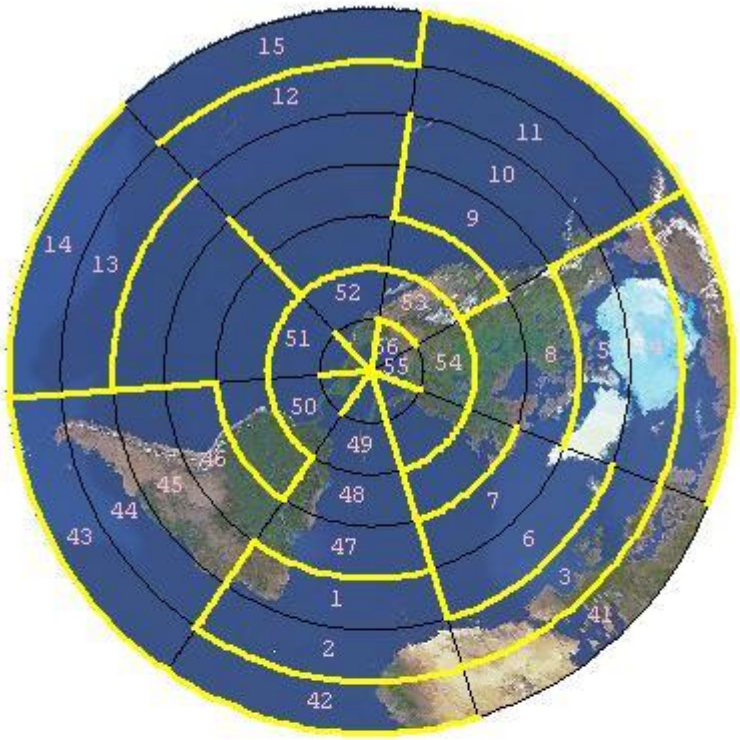
{9,2,5,3,4,10,12,13,7}

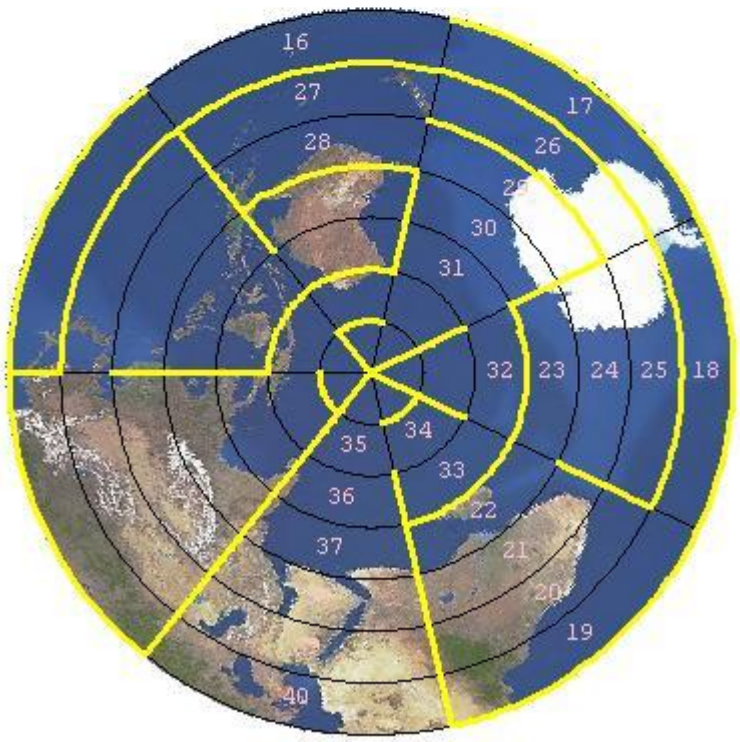
2.



{1,6,7,2,4,5,8}

Labirint na zemljevidu





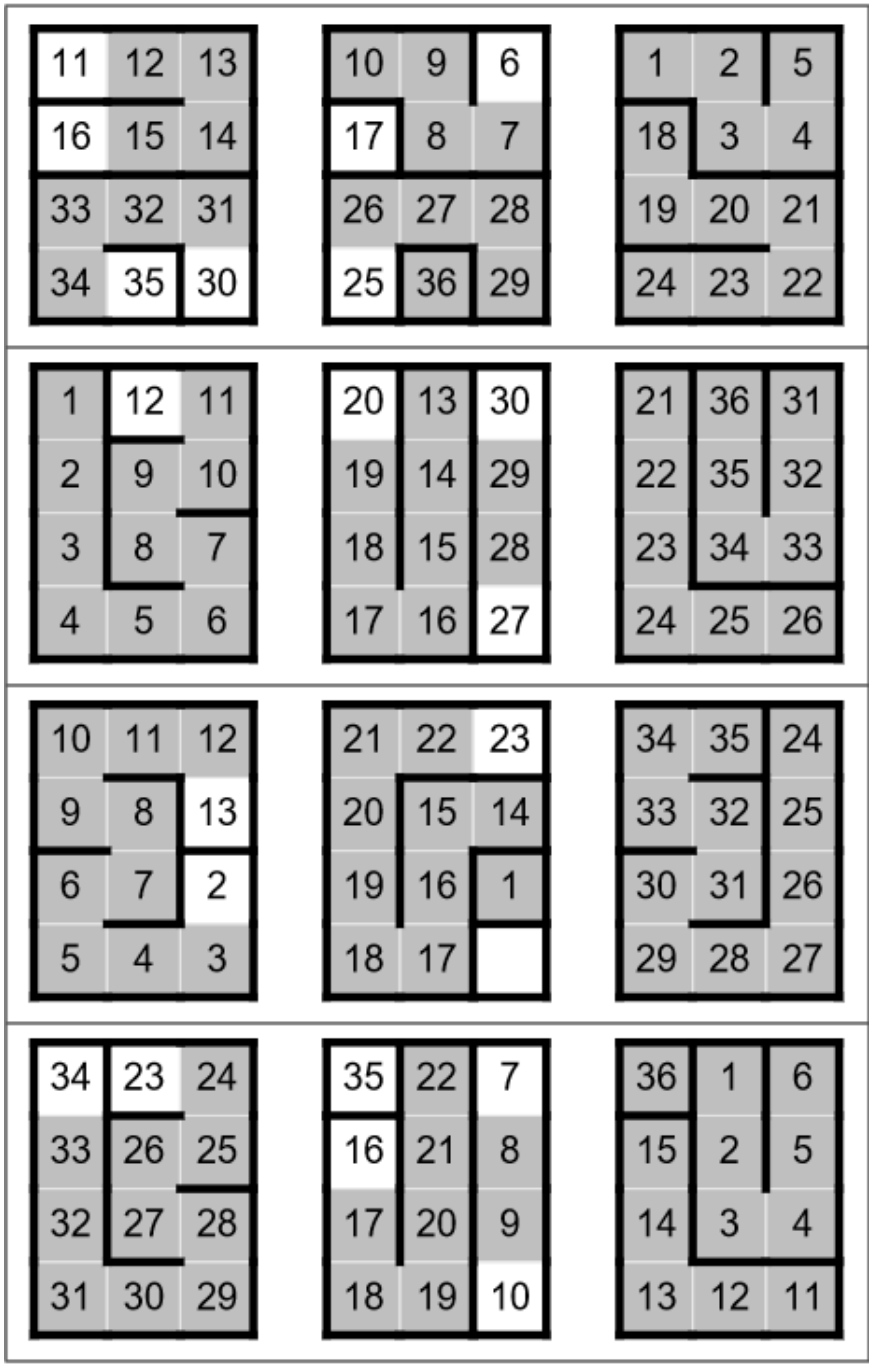
Odstranjene kocke

```
 90   89  56
113   60  54
 76  104  69
 71   61  69
```

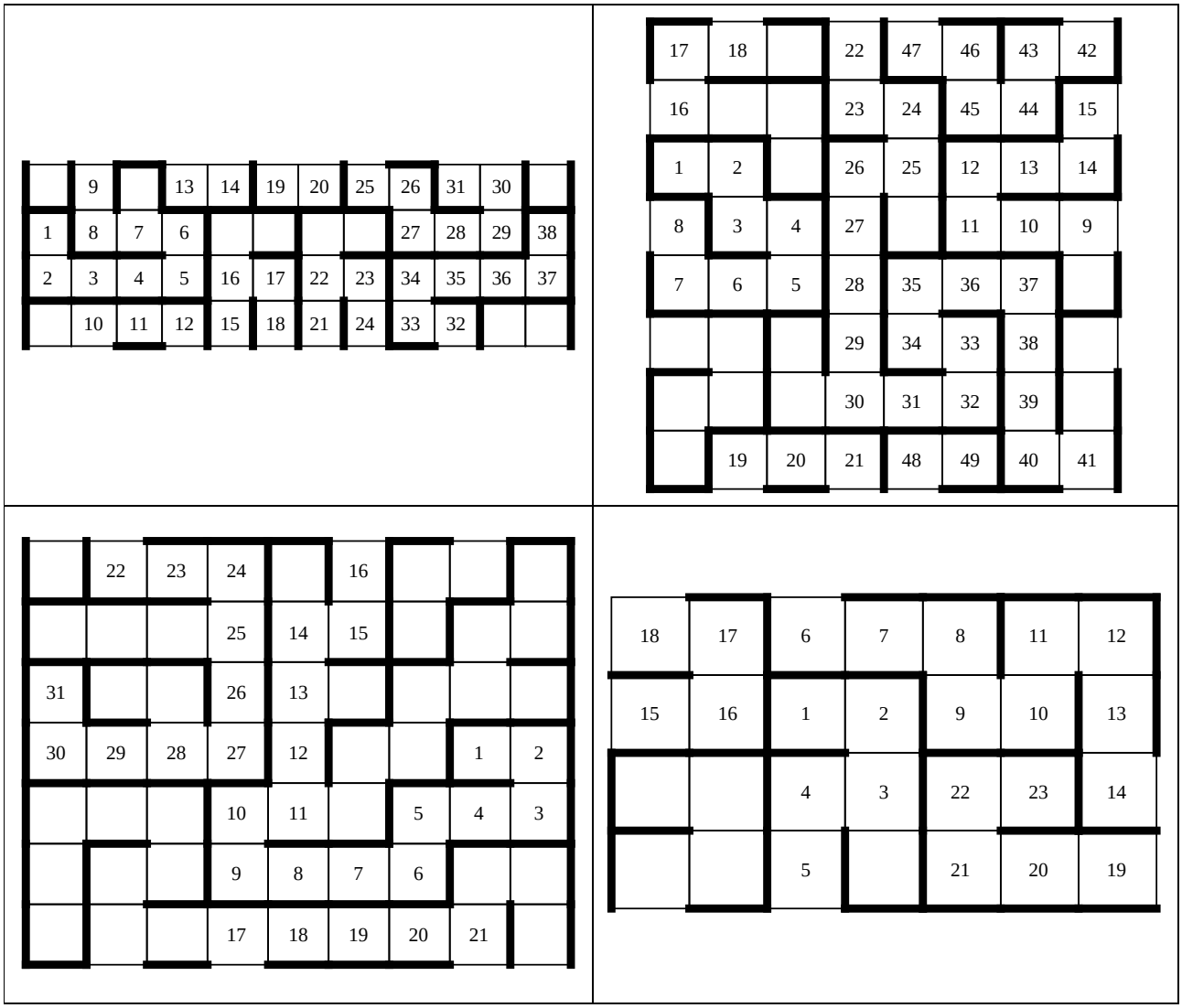
Kocki določi mrežo

```
{2, 2, 3, 3, 4, 4}
```

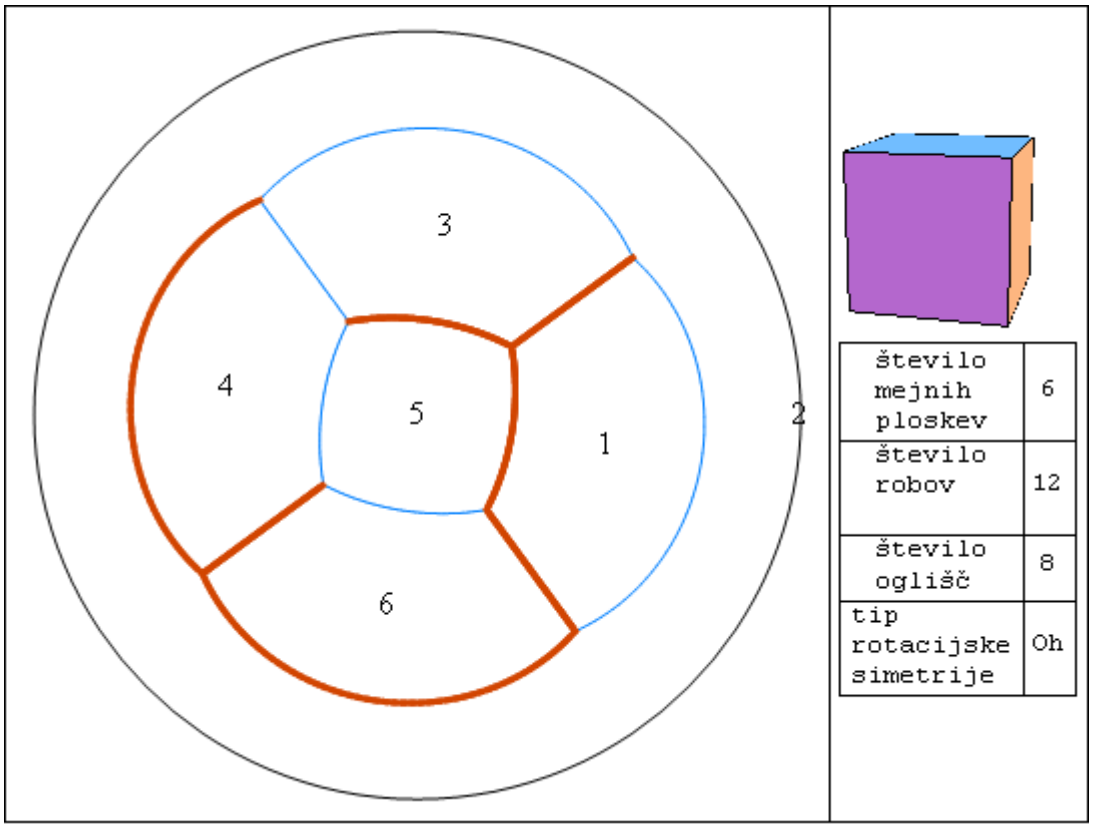
Labirint v kvadru



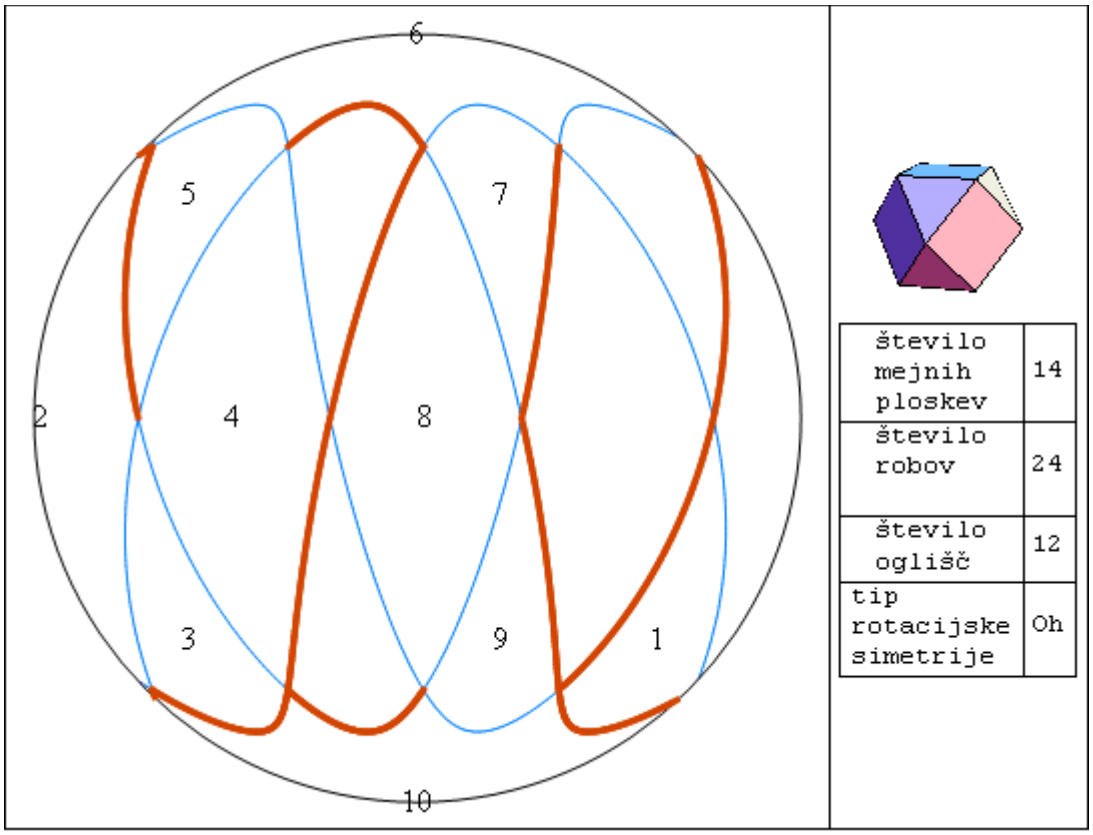
Labirint na ploskvah



Labirint na projekcijah teles



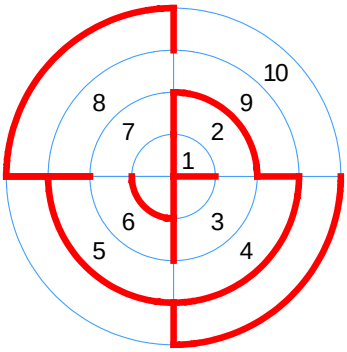
število mejnih ploskev	6
število robov	12
število oglišč	8
tip rotacijske simetrije	Oh

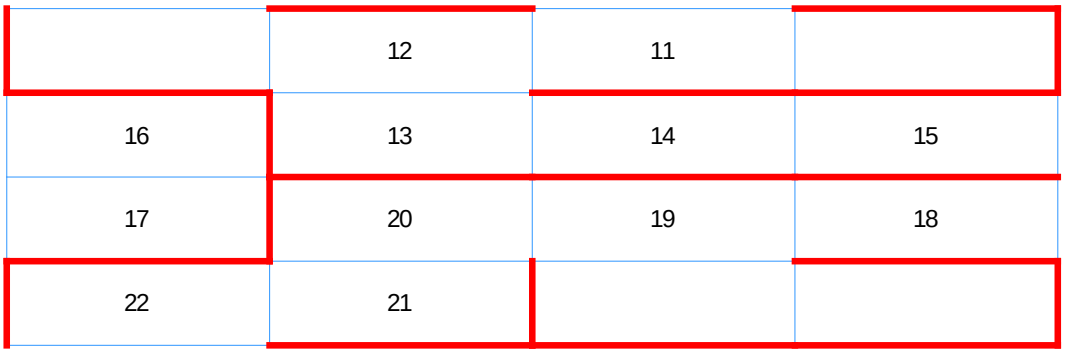


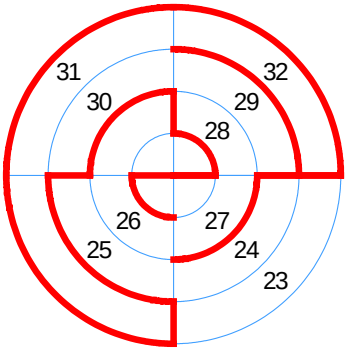
število mejnih ploskev	14
število robov	24
število oglišč	12
tip rotacijske simetrije	Oh

Labirinti na mreži valja in stožca

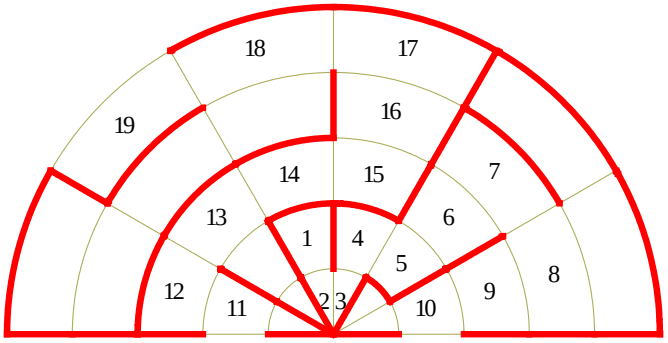
1.

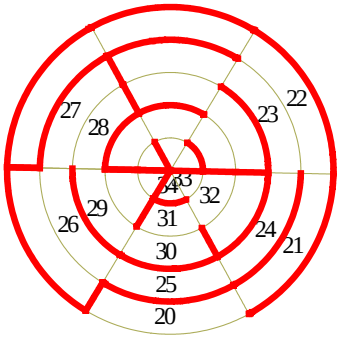






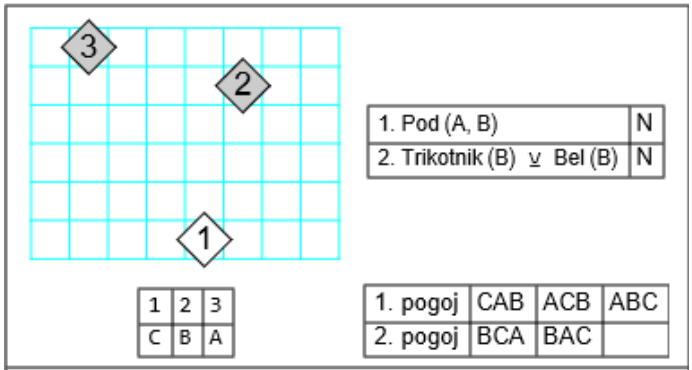
2.





Analiziraj pogoje nalog

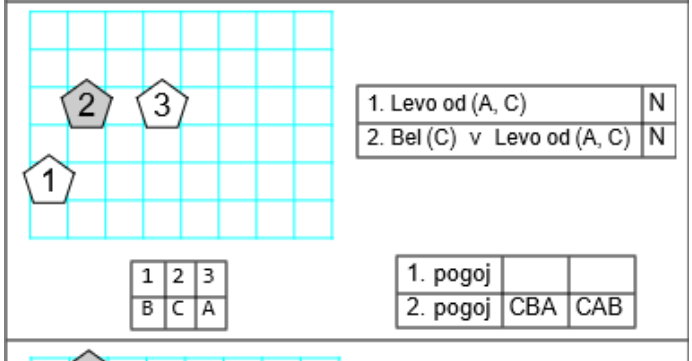
C B A	BCA	CAB	BAC
	ACB	ABC	
A B C	ACB	BAC	CAB
	CBA		
C A B	ABC	ACB	
	CBA		
B A C	BCA		
	CAB	ABC	CBA



1. Pod (A, B)	N
2. Trikotnik (B) ⩒ Bel (B)	N

1	2	3
C	B	A

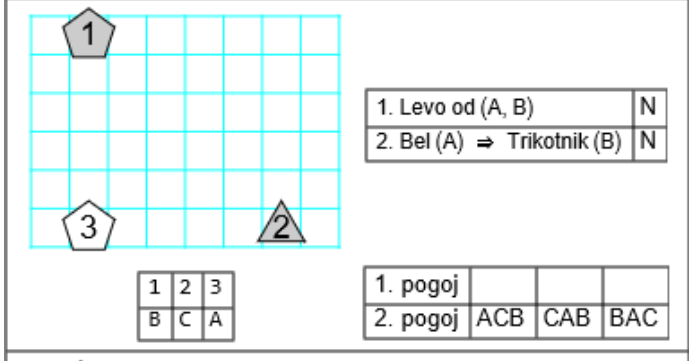
1. pogoj	CAB	ACB	ABC
2. pogoj	BCA	BAC	



1. Levo od (A, C)	N
2. Bel (C) ∨ Levo od (A, C)	N

1	2	3
B	C	A

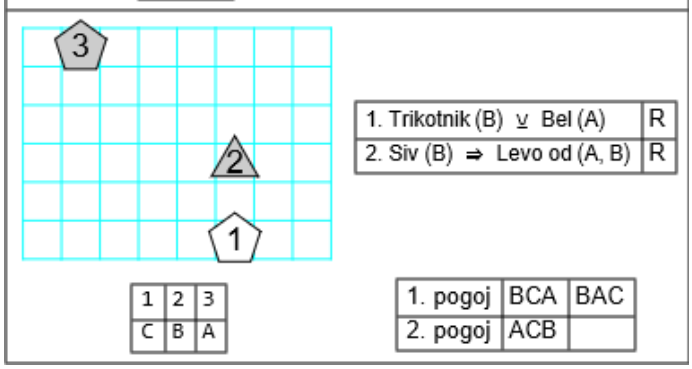
1. pogoj		
2. pogoj	CBA	CAB



1. Levo od (A, B)	N
2. Bel (A) ⇒ Trikotnik (B)	N

1	2	3
B	C	A

1. pogoj			
2. pogoj	ACB	CAB	BAC



1. Trikotnik (B) ⩒ Bel (A)	R
2. Siv (B) ⇒ Levo od (A, B)	R

1	2	3
C	B	A

1. pogoj	BCA	BAC
2. pogoj	ACB	

Logična naloga

```
Ada, Blisk, poni
Maja, Reno, frizijec
Eva, Mistral, arabec
Ana, Tornado, lisec
```

Naloga v esperantu

```
Iva, Tornado, poneo, Ljubljana
Jana, Serpento, islandano, Jesenice
Misxa, Sxtormo, lipizzaner, Maribor
```

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E-mail: **info@logika.si**
Spletna stran: **http://www.logika.si**.
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