

Homework 2

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Problem 1. *How many symbols are in L ?*

Problem 2. *How many sentences of L can be formed from just the sentence letter p , the symbol \rightarrow , and parentheses?*

Problem 3. *Which of the following are sentences of L ?*

1. p
2. $p \rightarrow q$
3. $(p \vee q)$
4. $(p \rightarrow (q \vee (\neg r \leftrightarrow s \neg)))$
5. $\neg \neg p \wedge q$

Problem 4. *Which of the following are sentences of L ?*

1. $q \vee p)$
2. q
3. $p \rightarrow (\neg(q \leftrightarrow p)) \vee r$
4. $\neg p$
5. $\vee p$

Problem 5. *Translate the sentence below into L .*

“Bats are bugs and grass is green.”

Problem 6. *Translate the sentence below into L .*

“The sun rises in the east.”

Problem 7. *Translate the sentence below into L.*

“Addie and Anse will not both graduate.”

Problem 8. *Translate the sentence below into L.*

“George can be rough, but he can also be kind.”

Problem 9. *Translate the sentence below into L.*

“Neither sticks nor stones can break my bones.”

Problem 10. *Translate the sentence below into L.*

“If grass is green, then grass is not green.”

Problem 11. *Translate the sentence below into L.*

“If you apologize, and if you never visit New Orleans again, and if you either start practicing yoga or help my friend fix their sink, then I might take you to the ball game and buy you some french fries.”

Problem 12. *Translate the argument below into L.*

1. *Grass is not red.*
2. *If grass is not red, then grass is not scarlet.*
3. *Grass is not scarlet.*

Problem 13. *Translate the argument below into L.*

1. *It is not raining.*
2. *If it is raining then there are clouds in the sky.*
3. *There are no clouds in the sky.*

Problem 14. *Translate the argument below into L.*

1. *Grass is green.*
2. *Oranges are orange.*
3. *Earth is a planet.*

Problem 15. *Translate the argument below into L.*

1. *If Huck Finn leaves, then Aunt Polly cannot not 'civilize' Huck Finn.*
2. *If Aunt Polly cannot not 'civilize' Huck Finn, then Huck Finn will become more moral.*
3. *If Huck Finn leaves, then Huck Finn will become more moral.*