

Module 4A: Logical equivalence of propositions

MTH 225

28 Sept 2020

Agenda

- Review of Daily Prep activity + Q/A time
- Activity: Checking logical equivalence with truth tables and logic circuits; coming up with new laws of logic
- Wrap up with ungraded quiz + feedback time

According to DeMorgan's Laws, $\neg(p \wedge q)$ is logically equivalent to

$$p \vee q$$

$$p \wedge q$$

$$(\neg p) \vee (\neg q)$$

$$(\neg p) \wedge (\neg q)$$

None of the above



To 0

The implication $p \rightarrow q$ is logically equivalent to

$$p \wedge q$$

$$(\neg p) \wedge q$$

$$p \vee (\neg q)$$

$$q \rightarrow p$$

None of the above



To

0

The negation of $p \rightarrow q$ is

$$(\neg p) \rightarrow q$$

$$p \rightarrow (\neg q)$$

$$(\neg q) \rightarrow (\neg p)$$

$$(\neg p) \rightarrow (\neg q)$$

None of the above



To 0

Q&A time

Activities: Go to Jamboard link on
Campuswire.

Alice wants to search through a database for items that have neither the tag @home or @work on them. What could she enter in for the search to retrieve those items?

@home and @work

(not @home) or (not @work)

(not @home) and (not @work)

(@home and (not @work)) or (@work and (not @home))



Tc 0

A lawyer claims that if his client was at work on Monday, then the client did not have drugs in his car. You, the opposing lawyer, want to show the opposite. So you would need to establish that

If the client had drugs in his car, the client wasn't at work on Monday.

If the client was at work on Monday, then he did have drugs in his car.

The client was not at work on Monday, and he did have drugs in his car.

Either the client was at work on Monday or he did not have drugs in his car.



To 0