CLASS: Logical Statement and Equivalence

Due Jan 23 at 11:59pm **Points** 10 **Questions** 10 **Time Limit** None
Allowed Attempts Unlimited

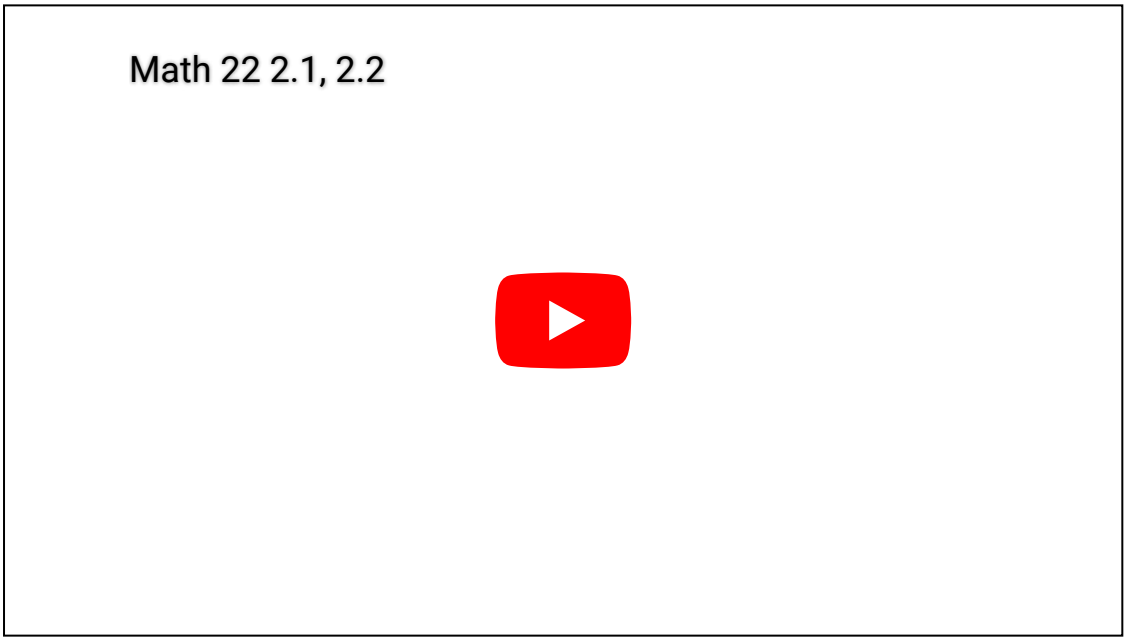
Instructions

Have your Math 22 notebook prepared to write the definition and the examples.

This CLASS assignment is an introduction to Logical Statements and Equivalence.

You have multiple attempts in answering the questions.

My old lecture:



Take the Quiz Again

Attempt History

	Attempt	Time	Score
KEPT	Attempt 2	5 minutes	10 out of 10
LATEST	Attempt 2	5 minutes	10 out of 10
	Attempt 1	90 minutes	5 out of 10

ⓘ Correct answers are hidden.

Score for this attempt: **10** out of 10
Submitted Jan 23 at 4:54pm
This attempt took 5 minutes.

Question 1

1 / 1 pts

Equivalent Statements with Example (Double Negation) (https://www.youtube.com/watch?v=yfHFNph5wTE)

Implication and De Morgan.pdf (https://deanza.instructure.com/courses/33250/files/10754811?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754811/download?download_frd=1)

not(not P) is equivalent to

- contradiction
- T
- F
- P

Question 2

1 / 1 pts

P then Q is the same as (https://www.youtube.com/watch?v=U8mle1ApP84)

Implication and De Morgan.pdf (https://deanza.instructure.com/courses/33250/files/10754811?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754811/download?download_frd=1)

- P or Q
- P and Q
- notP and Q
- notP or Q

Question 3

1 / 1 pts

Logical statement- De Morgan's laws (https://www.youtube.com/watch?v=MqSWzA_VnEQ)

Implication and De Morgan.pdf (https://deanza.instructure.com/courses/33250/files/10754811?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754811/download?download_frd=1)

Now answer the following question:

Are the following statements logically equivalent?

$$\sim(p \wedge q) \text{ and } \sim p \wedge \sim q$$

Yes

No

Question 4

1 / 1 pts

Logical Equivalence List of Laws (https://www.youtube.com/watch?v=FMnW2xCl3Wc&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=90

Tautology, Contradiction, and Logical Statements.pdf (https://deanza.instructure.com/courses/33250/files/10754985?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754985/download?download_frd=1)

Now answer the following question:

This is called De Morgan's Laws

$$\sim(p \wedge q) \equiv \sim p \vee \sim q \qquad \sim(p \vee q) \equiv \sim p \wedge \sim q$$

True

False

Question 5

1 / 1 pts

Tautology and Contradiction with Example (https://www.youtube.com/watch?v=A_dF-9Ks65w&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=89)

Tautology, Contradiction, and Logical Statements.pdf (https://deanza.instructure.com/courses/33250/files/10754985?wrap=1)

(https://deanza.instructure.com/courses/33250/files/10754985/download?download_frd=1)

Now answer the following question:

$$p \vee \sim p$$

If the statement is tautology write tautology otherwise write contradiction

tautology

Question 6

1 / 1 pts

Tautology and Contradiction with Example (https://www.youtube.com/watch?v=A_dF-9Ks65w&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=89)

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Now answer the following question:

$$p \wedge \sim p$$

If the statement is tautology write tautology otherwise write contradiction

contradiction

Question 7

1 / 1 pts

Logical Equivalence List of Laws (https://www.youtube.com/watch?v=FMnW2xCl3Wc&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=90

Tautology, Contradiction, and Logical Statements.pdf (https://deanza.instructure.com/courses/33250/files/10754985?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754985/download?download_frd=1)

Now answer the following question:

Which law is this?

$$p \wedge q \equiv q \wedge p \qquad p \vee q \equiv q \vee p$$

commutative law

Question 8

1 / 1 pts

Logical Equivalence List of Laws (https://www.youtube.com/watch?v=FMnW2xCl3Wc&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=90

Tautology, Contradiction, and Logical Statements.pdf (https://deanza.instructure.com/courses/33250/files/10754985?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754985/download?download_frd=1)

Now answer the following question:

Which law is this?

$(p \wedge q) \wedge r \equiv p \wedge (q \wedge r)$ $(p \vee q) \vee r \equiv p \vee (q \vee r)$

associative law

Question 9

1 / 1 pts

Logical Equivalence List of Laws (https://www.youtube.com/watch?v=FMnW2xCl3Wc&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=90

Tautology, Contradiction, and Logical Statements.pdf (https://deanza.instructure.com/courses/33250/files/10754985?wrap=1) (https://deanza.instructure.com/courses/33250/files/10754985/download?download_frd=1)

Now answer the following question:

Which law is this?

$p \wedge (q \vee r) \equiv (p \wedge q) \vee (p \wedge r)$ $p \vee (q \wedge r) \equiv (p \vee q) \wedge (p \vee r)$

distributive law

Question 10

1 / 1 pts

Logical Equivalence List of Laws (https://www.youtube.com/watch?v=FMnW2xCl3Wc&list=PLiwEbczHeZcuf7VyebtyKcVDqfViUkqfh&index=90

Now answer the following question:

Which law is this?

$p \wedge p \equiv p$ $p \vee p \equiv p$

idempotent law

Quiz Score: **10** out of 10