Question 1

Not yet answered

Marked out of 2.00

Flag question

Which of the following can be proved using proof by contradiction.

- a. The sum of two odd integers is even.
- b. The square of an even number is an even number
- c. If $3n + 2$ is even, then n is even
- d. If n is odd then $3n+7$ is even
- e. All the choices are correct

Which of the following describes the proposition $(\neg p \vee q) \wedge q$?

- a. It is tautology
- b. It is contradiction
- c. It is logically equivalent to $p \wedge q$
- d. It is logically equivalent to p
- e. It is logically equivalent to q

If $A = \{x, y\}$, and $B = \{1, 4, -3\}$, what is the value of $A \times B$

- a. $\{(4, x), (4, y), (1, x), (1, y), (-3, x), (-3, y)\}$
- b. $\{\{x, 1\}, \{x, 4\}, \{x, -3\}, \{y, 1\}, \{y, 4\}, \{y, -3\}\}$
- c. $\{(y, 1), (x, 1), (y, 4), (x, 4), (y, -3), (x, -3)\}$
- d. $\{x1, y1, x4, y4, -x3, -y3\}$
- e. 6

Question 2

Not yet answered

Marked out of 2.00

Flag question

Is the following inference correct? if not identify the error in which step.

If $\exists x(P(x) \wedge Q(x))$ is true, then

$\exists x P(x) \wedge \exists x Q(x)$ is true

1. $\exists x(P(x) \wedge Q(x))$ Premise
2. $P(c) \wedge Q(c)$ Existential instantiation from (1)
3. $P(c)$ Simplification from (2)
4. $\exists x P(x)$ Existential generalization from (3)
5. $Q(c)$ Simplification from (2)
6. $\exists x Q(x)$ Existential generalization from (5)
7. $\exists x P(x) \wedge \exists x Q(x)$ Conjunction from (4) and (6)

- a. Error in Steps 3 and 5
- b. Error in Step 2
- c. Error in Step 7
- d. Error in Steps 4 and 6
- e. The inference is correct

Question 4

Not yet answered

Marked out of 2.00

Flag question

Which of the following can be proved using proof by contrapositive

- a. The sum of two odd integers is even.
- b. The square of an even number is an even number
- c. If $3n + 2$ is even, then n is even
- d. If n is odd then $3n+7$ is even
- e. All the choices are correct

Clear my choice

$\neg p \wedge \neg q \rightarrow \neg q \equiv$

- a. $\neg q$
- b. $\neg p \vee \neg q$
- c. $True$
- d. $p \wedge q$
- e. None of the choices is correct

If $A \subseteq B$, then $\overline{B} \cap A =$

- a. A
- b. B
- c. ϕ
- d. $\overline{A}$
- e. $\overline{B}$

Let the set S = $\{x|x \in Z \wedge x > 4 \wedge x < 10\}$

|S| =

- a. 3
- b. 4
- c. 5
- d. 6
- e. 7

Question 6

Not yet answered

Marked out of 2.00

Flag question

$\neg p \vee \neg q \rightarrow q \equiv$

a. q

b. $p \wedge q$

c. $True$

d. $False$

e. None of the choices is correct

Question 7

Not yet

Let the set S = $\{x | x \in Z \wedge x > 4 \wedge x < 10\}$

Given the following premises:

p: The student has graduated

q: The student passed the courses

r: The student has paid his tuition fees

What is the translation of the following statement?

The student will not graduate only if he has not passed his courses or has not paid his tuition fees

- a. $\neg r \vee \neg q \rightarrow \neg p$
- b. $r \vee q \rightarrow p$
- c. $\neg p \rightarrow \neg q \vee \neg r$
- d. $\neg r \wedge \neg q \rightarrow \neg p$
- e. $\neg r \vee \neg q \leftrightarrow \neg p$

The premises $(p \wedge q) \vee r$ and $r \rightarrow s$ imply which of the conclusions?

- a. $p \vee r$
- b. $p \vee s$
- c. $p \vee q$
- d. $q \vee r$
- e. $p \wedge q$

Given the following premises:

p: student has graduated

q: The student passed the courses

r: The student has paid his tuition fees

What is the translation of the following statement?

If the student did not pay his tuition fees or did not pass his courses, he will not graduate

a. $\neg r \vee \neg q \rightarrow \neg p$

b. $r \vee q \rightarrow p$

c. $p \rightarrow q \vee r$

d. $\neg r \wedge \neg q \rightarrow \neg p$

e. $\neg r \vee \neg q \leftrightarrow \neg p$

If $A \subseteq B$, then $\overline{B} - \overline{A} =$

a. A

b. B

c. ϕ

d. $\overline{A}$

e. $\overline{B}$

Which of the following is true where the domain consists of positive integers.

- a. $\forall x \exists y(x+y=0)$
- b. $\exists x \forall y(x<y^2)$
- c. $\forall x \forall y(x+y>0)$
- d. $\forall x \exists y(xy=0)$
- e. None of the answers is correct

Question 11

Not yet answered

Marked out of 2.00

Flag question

Which conclusion logically follows from the following premises?

$\neg p \rightarrow \neg q$

$\neg r \rightarrow q$

- a. $\neg p$
- b. $\neg p \vee r$
- c. $r \vee p$
- d. $\neg p \vee \neg r$
- e. $p \vee \neg r$

Which of the following is true, where the domain consists of negative integers

- a. $\exists x(x+5>4)$
- b. $\forall x(5x<0)$
- c. $\forall x(7x>0)$
- d. $\exists x(2x=0)$
- e. All the choices are correct

Let the set $S = \{1, 2, \{3, 4\}\}$. Which of the following is true

- a. $\{1\} \in S$
- b. $\{1, 3\} \subseteq S$
- c. $\{4\} \in S$

Question 15

Not yet answered

Marked out of 2.00

Flag question

Let the set S = $\{1, \{2\}, 3, 4\}$. Which of the following is true

a. $\{2\} \in S$

b. $\{1, 2\} \subseteq S$

c. $\{4\} \in S$

d. $\Phi \in S$

e. $\{3, 4\} \in S$

Which of the following is true?

- a. If 3 is an odd integer, then -3 is not a negative integer.
- b. 12 is an odd number or -4 is not a negative number.
- c. 5 is a negative integer if and only 5 is an odd number
- d. 2 is a positive integer and 5 is a not a negative number
- e. None of the choices is correct

Clear my choice

What is the translation of the following predicate (Domain: all animals)

Where:

L(x): x is lion

W(x): x is weak

S(x): x is strong

"All lions are strong or weak"

- a. $\forall x(L(x) \rightarrow S(x) \vee W(x))$
- b. None of the choices is correct
- c. $\forall x(L(x) \wedge (S(x) \vee W(x)))$
- d. $\exists x(L(x) \rightarrow S(x) \vee W(x))$
- e. $\exists x(L(x) \wedge (S(x) \vee W(x)))$

Which of the following is true where the domain consists of integer numbers.

- a. $\exists x \forall y (x + y = 0)$
- b. $\forall x \exists y (x = y^2)$
- c. $\forall x \forall y (x + y > 0)$
- d. $\forall x \exists y (xy < 0)$
- e. None of the answers is correct

Clear my choice

Let the set S = $\{x|x \in Z \wedge x > 3 \wedge x < 10\}$

|S| =

- a. 3
- b. 4

Is the following inference correct? if not identify the error in which step.

If $\exists x P(x) \wedge \exists x Q(x)$ is true, then

$\exists x(P(x) \wedge Q(x))$ is true

1. $\exists x P(x) \wedge \exists x Q(x)$ Premise

2. $\exists x P(x)$ Simplification from (1)

3. $P(c)$ Existential instantiation from (2)

4. $\exists x Q(x)$ Simplification from (1)

5. $Q(c)$ Existential instantiation from (4)

6. $P(c) \wedge Q(c)$ Conjunction from (3) and (5)

7. $\exists x(P(x) \wedge Q(x))$ Existential generalization

- a. Error in Steps 2 and 4
- b. Error in Step 3
- c. Error in Step 7
- d. Error in Step 5

If $A = \{1, 4, -3\}$, and $B = \{x, y\}$, what is the value of $A \times$

- a. $\{(4, x), (4, y), (1, x), (1, y), (-3, x), (-3, y)\}$
- b. $\{\{1, x\}, \{4, x\}, \{-3, x\}, \{1, y\}, \{4, y\}, \{-3, y\}\}$
- c. $\{(x, 4), (y, 4), (x, 1), (y, 1), (x, -3), (y, -3)\}$
- d. $\{1x, 1y, 4x, 4y, -3x, -3y\}$
- e. 6