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SCIENCE

rt I: Write "True" if the statement is correct or "False" if it's incorrect. (8 pts)

_____1. "My car is extremely attractive." is a proposition.

_____2. For any propositions p and q, $(p \Rightarrow q) \equiv (\neg q \Rightarrow \neg p)$.

_____3. The truth value of "For every rational number r, the number $\frac{1}{r}$ is rational" is True.

_____4. The argument $p \Leftrightarrow q, p \vdash q$ is invalid.

_____5. The product of any two irrational numbers is rational.

_____6. Relation f defined by $f(1) = 2, f(2) = 3, f(4) = 6, f(2) = 8, f(3) = 9$ is a function.

art II: Fill in the blank space with the most simplified answer on the space provid
(1.5 pts each)

1. The inverse of "If cow is an endemic animal, then a triangle has four sides." is

_____

2. Let $\begin{cases} p: cow \text{ is an endemic animal.} \\ q: 9 \text{ is a composite number.} \\ r: 1 \text{ is a prime number.} \end{cases}$ Then the

_____

3. Based on th

my car

$f(1) = 2, f(2) = 3, f(4$

4. If $B \subseteq A$

5. The inver

6. Let $A = \{1$

the d

Part I: Write "True" if the statement is correct or "False" if it's incorrect. (6 pts)

_____ 1. "My cat is extremely attractive." is a proposition.

_____ 2. For any propositions p and q, $(p \Longrightarrow q) \equiv (\neg q \Longrightarrow \neg p)$.

_____ 3. The truth value of "For every rational number r, the number $\frac{1}{r}$ is rational" is True.

_____ 4. The argument $p \Longleftrightarrow q, p \vdash q$ is invalid.

_____ 5. The product of any two irrational numbers is rational.

_____ 6. Relation f defined by $f(1) = 2, f(2) = 3, f(4) = 6, f(2) = 8, f(5) = 8$ is a function.

Part II: Fill in the blank space with the most simplified answer on the space provide
(1.5 pts each)

1. The inverse of "If cow is an endemic animal, then a triangle has four sides." is

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III: Work out (show the necessary steps clearly and neatly). (4 pts each)

Prove the validity of the argument $p \Rightarrow \neg q,\ p,\ r \Rightarrow q \vdash \neg r$

a. using truth table.

b. using rules of inferences.

Part I: Write "True" if the statement is correct or "False" if it's incorrect. (6 pts)

False 1. "My car is extremely attractive." is a proposition.

False 2. For any propositions p and q, $(p \Rightarrow q) \equiv (\neg q \Rightarrow \neg p)$.

False 3. The truth value of "For every rational number r, the number $\frac{1}{r}$ is rational" is True.

False 4. The argument $p \Leftrightarrow q, p \vdash q$ is invalid.

False 5. The product of any two irrational numbers is rational.

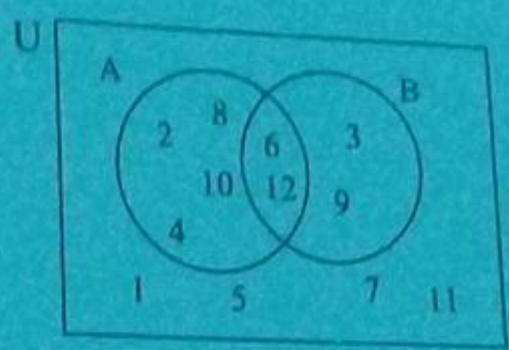
True 6. Relation f defined by $f(1) = 2, f(2) = 3, f(4) = 6, f(2) = 8, f(5) = 8$ is a function.

Part II: Fill in the blank space with the most simplified answer on the space provided. (1.5 pts each)

1. The inverse of "If cow is an endemic animal, then a triangle has four sides." is
if a cow is not endmic animal then a triangle doesn't four

2. Let $\begin{cases} p: \text{cow is an endemic animal.} \\ q: 9 \text{ is a composite number.} \\ r: 1 \text{ is a prime number.} \end{cases}$ Then the truth value of $(p \wedge q) \Leftrightarrow (\neg q \vee r)$ is
False

3. Based on the Venn diagram below,



a. $A \Delta B =$ {2, 8, 10, 4, 3, 9}
b. $A' =$ {3, 9, 1, 5, 7}
c. $A' \cap B' =$ {1, 5, 7}

4. If $B \subseteq A$, $A \cap B' = \{1,4,5\}$ and $A \cup B = \{1,2,3,4,5,6\}$, then $B =$ (2, 3, 6)

5. The inverse of $f(x) = 2x + 5$ is $f(x) = x - 5/2$

6. Let $A = \{1, 2, 3, 4, 5, 6\}$ and R be a realtion defined on A by $R = \{(x, y): y = x + 2\}$. Then
   a. the domain of R is _____
   b. the codomain of R is _____
   c. the range of R is _____

7. The solution set of the equation $3x - (2 + 3(2 - x)) = 5 - (3 - x)$ is _____

8. The solution set of the quadratic inequality $x^2 - 5x - 24 > 0$ is _____