# PRINTABLE VERSION

## Quiz 3

You scored 70 out of 100

**Question 1**

Your answer is CORRECT.

Suppose we are told that set $A$ satisfies $\{1, \pi, \clubsuit\} \cap A = \emptyset$. Of the following options which can be used for the set $A$?

**a)** ○ $\{-1, \clubsuit, \heartsuit\}$

**b)** ○ $\{1, \pi, \clubsuit\}$

**c)** ○ $\{\pi, 2\}$

**d)** ○ $\mathbb{Z}$

**e)** ○ No set $A$ will make this true.

**f)** ◉ $\{\heartsuit\}$

**Question 2**

Your answer is INCORRECT.

The statement $A \cup B = A$ implies which of the following?

**a)** ○ $A = \emptyset \wedge B = \emptyset$

**b)** ○ $\forall x \in B, x \in A.$

**c)** ◉ $\forall x \in A, x \in B.$

**d)** ○ $\exists x, x \in A \wedge x \in B.$

**Question 3**

Your answer is CORRECT.

Suppose $|S| = 5$ and $|S \times T| = 30.$ What is the cardinality of $T$?

**a)** ⦿ $|T| = 6$

**b)** ◯ $|T| = 30$

**c)** ◯ $|T| = 150$

**d)** ◯ $|T| = 1$

**e)** ◯ $|T| = 11$

## Question 4

Your answer is CORRECT.

Suppose $|T| = 4$ and $|P(S) \times T| = 64.$ What is the cardinality of $S$ ?

**a)** ◯ $|S| = 16$

**b)** ⦿ $|S| = 4$

**c)** ◯ $|S| = 64$

**d)** ◯ $|S| = 2^4$

**e)** ◯ $|T| = 4$

## Question 5

Your answer is CORRECT.

Is it possible for $\{5\} \subseteq R$ ?

**a)** ⦿ This is true. It always happens!

**b)** ◯ This can happen, but it doesn't always happen.

**c)** ◯ This is impossible! It never happens!

## Question 6

Your answer is CORRECT.

Consider the set $S$ defined below:
$$S = \{n \in N : 2n = 1 \ \vee \ 3n = 1\}$$
Which of the following is true?

**a)** ○ $S = \{2^b : b \in N\}$

**b)** ○ $S = N$

**c)** ○ $S = \{2i + 1 : i \in N\}$

**d)** ○ $S = \{2m : m \in N\}$

**e)** ◉ $S = \emptyset$

## Question 7

Your answer is CORRECT.

Suppose we have two sets $S$ and $T$, each described in terms of a condition: $S = \{x \in U : P(x)\}$ and $T = \{x \in U : Q(x)\}$ . (Here $U$ is a Universal set.) If it is also true that
$$T \subseteq S$$
then which of the following statements must be true?

**a)** ○ $\forall x \in U, \ Q(x) \nRightarrow P(x)$

**b)** ○ $\forall x \in U, \ P(x) \nRightarrow Q(x)$

**c)** ○ $\exists t \in U, P(t) \wedge Q(t)$

**d)** ○ $\forall x \in U, \ P(x) \Rightarrow Q(x)$

**e)** ◉ $\forall x \in U, \ Q(x) \Rightarrow P(x)$

## Question 8

Your answer is INCORRECT.

A Venn Diagram or De Morgan's Laws should help you complete this sentence:
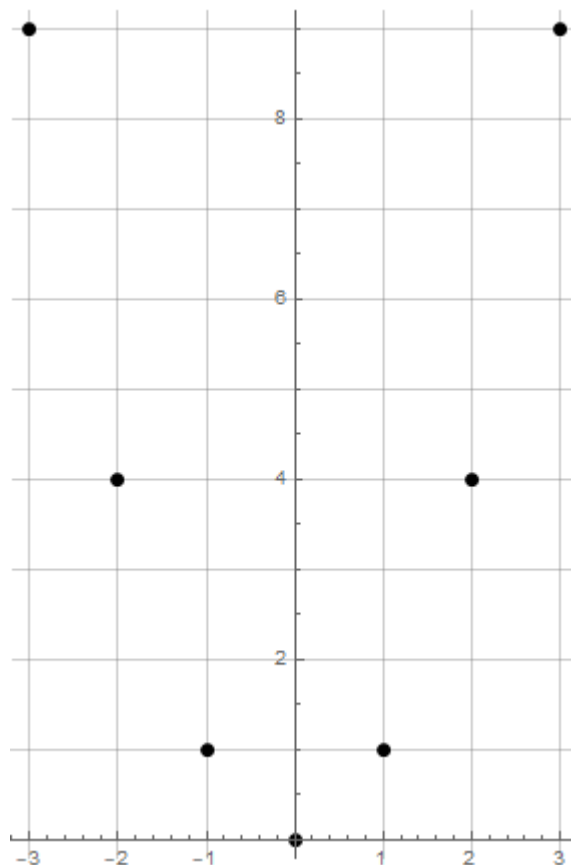$$\overline{(A \cap B)} \ = $$

**a)** ○ $B \cup \overline{A}$

**b)** ○ $\overline{A} \cup B$

**c)** ○ $\overline{A} \cap \overline{B}$

**d)** ○ $\overline{A} \cup \overline{B}$

**e)** ⦿ $A \cup \overline{B}$

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**Question 9**

Your answer is CORRECT.

Consider the image shown:



Which set of points is depicted in the image above?

**a)** ○ $\{(x, \sqrt{9 - x^2}) : x \in Z \wedge -3 \le x \le 3\}$

**b)** ○ $\{(x, \sin(\pi x)) : x \in Z \wedge -3 \le x \le 3\}$

**c)** ○ $\{(2, x) : x \in Z \wedge -3 \le x \le 3\}$

**d)** ○ $\{(x, 2) : x \in Z \wedge -3 \le x \le 3\}$

**e)** ⦿ $\{(x, x^2) : x \in Z \wedge -3 \le x \le 3\}$

**f)** ○ $\{(x, 2x) : x \in Z \wedge -3 \le x \le 3\}$

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**Question 10**

Your answer is INCORRECT.

$P\left(\{2,6\}\right)\ \cap\ P\left(\{2,-2,6\}\right)=$

**a)** ⦿ $\{2,6\}$

**b)** ○ $\{\ \{6\},\ \{2,6\}\ \}$

**c)** ○ $\{\ \emptyset,\ \{2\},\ \{6\},\ \{2,6\}\ \}$

**d)** ○ $\{\ \{-2\}\ \}$

**e)** ○ $\{2,6,-2\}$

**f)** ○ $\{\ \{6\}\ \}$