PRINTABLE VERSION

Quiz 3

You scored 100 out of 100

Question 1

Your answer is CORRECT.

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

a) Z

b) No set A will make this true.

c) $\{1, \pi, \clubsuit\}$

d) $\{-1, \clubsuit, \heartsuit\}$

e) $\{\pi, 2\}$

f) $\{\heartsuit\}$

Question 2

Your answer is CORRECT.

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

a) $\exists\, x,\ x \in A \ \wedge\ x \in B.$

b) $A = \emptyset \ \wedge\ B = \emptyset$

c) $\forall\, x \in B,\ x \in A.$

d) $\forall\, x \in A,\ x \in B.$

Question 3

Your answer is CORRECT.

Suppose $|S| = 3$ and $|S \times T| = 12.$ What is the cardinality of T?

a) $|T| = 7$

b) $|T| = 1$

c) $|T| = 4$

d) $|T| = 12$

e) $|T| = 36$

Question 4

Your answer is CORRECT.

Suppose $|T| = 5$ and $|P(S) \times T| = 40$. What is the cardinality of S ?

a) $|T| = 5$

b) $|S| = 8$

c) $|S| = 3$

d) $|S| = 2^5$

e) $|S| = 40$

Question 5

Your answer is CORRECT.

Is it possible for $|S| = 0$?

a) This can happen, but it doesn't always happen.

b) This is impossible! It never happens!

c) This is true. It always 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) $S = \emptyset$

b) $S = \{2m : m \in N\}$

c) $S = \{2i + 1 : i \in N\}$

d) $S = N$

e) $S = \{2^b : b \in N\}$

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 CORRECT.

A Venn Diagram or De Morgan's Laws should help you complete this sentence:

$$\overline{A \cup B} =$$

a) $A \cup \overline{B}$

b) $\overline{A} \cap \overline{B}$

c) $B \cup \overline{A}$

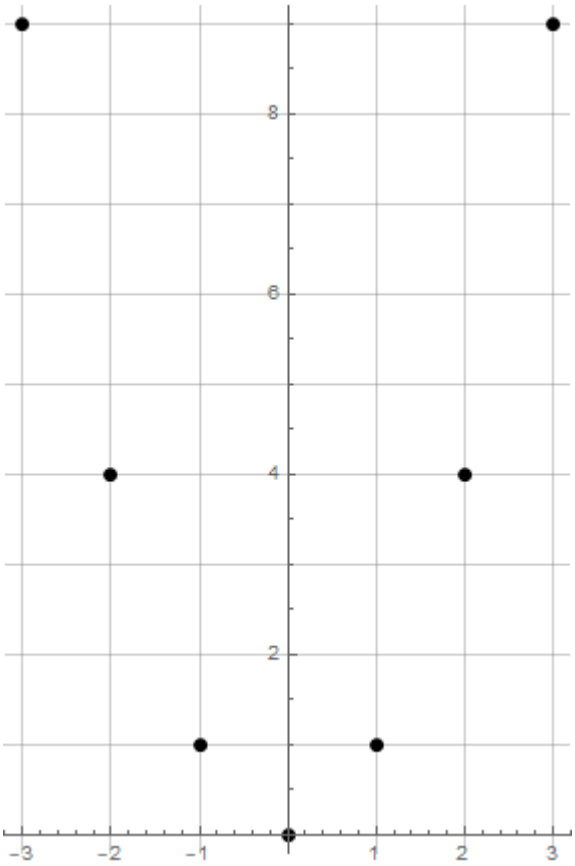
d) $\overline{A} \cup \overline{B}$

e) $\overline{A} \cup B$

Question 9

Your answer is CORRECT.

Consider the image shown:



Which set of points is depicted in the image above?

a) $\{(x, x^2) : x \in Z \wedge -3 \leq x \leq 3\}$

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

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

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

e) $\{(x, 2) : x \in Z \wedge -3 \leq x \leq 3\}$

f) $\{(x, \sqrt{9 - x^2}) : x \in Z \wedge -3 \leq x \leq 3\}$

Question 10

Your answer is CORRECT.

$P(\{2,4\}) \cap P(\{2,-3,4\}) =$

a) ○ $\{\ \{4\},\ \{2,4\}\ \}$

b) ○ $\{\ \{-3\}\ \}$

c) ○ $\{2,4,-3\}$

d) ○ $\{\ \{4\}\ \}$

e) ◉ $\{\ \emptyset,\ \{2\},\ \{4\},\ \{2,4\}\ \}$

f) ○ $\{2,4\}$