PRINTABLE VERSION

Quiz 3

You scored 60 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 $A \cup B = \emptyset$ implies which of the following?

a) ○ $\forall x \in A, x \in B.$

b) ◉ $\exists x, x \in A \wedge x \in B.$

c) ○ $A = \emptyset \wedge B = \emptyset$

d) ○ $\forall x \in B, x \in A.$

Question 3

Your answer is CORRECT.

Suppose $|S| = 7$ and $|S \times T| = 14$. What is the cardinality of T?

a) ◉ $|T| = 2$

b) ○ $|T| = 98$

c) ○ $|T| = 5$

d) ○ $|T| = 14$

e) ○ $|T| = 9$

Question 4

Your answer is INCORRECT.

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 $|P(S)| = 10$?

a) ◉ This is impossible! It never happens!

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

c) ○ This is true. It always happens!

Question 6

Your answer is CORRECT.

Consider the set S defined below:
$$S = \{n \in N : 2^{-a} \cdot n = 1 \text{ for some } a \in N\}$$
Which of the following is true?

a) ○ $S = \{2i + 1 : i \in N\}$

b) ◉ $S = \{2^b : b \in N\}$

c) ○ $S = N$

d) ○ $S = \emptyset$

e) ○ $S = \{2m : m \in N\}$

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
$$T \nsubseteq S$$
then which of the following statements must be true?

a) ○ $\forall x \in U, \; Q(x) \Rightarrow P(x)$

b) ○ $\exists t \in U, \; P(t) \wedge Q(t)$

c) ○ $\forall x \in U, \; P(x) \Rightarrow Q(x)$

d) ◉ $\forall x \in U, \; Q(x) \nRightarrow P(x)$

e) ○ $\forall x \in U, \; P(x) \nRightarrow Q(x)$

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) ◉ $A \cup \overline{B}$

b) ○ $B \cup \overline{A}$

c) ○ $\overline{A} \cap \overline{B}$
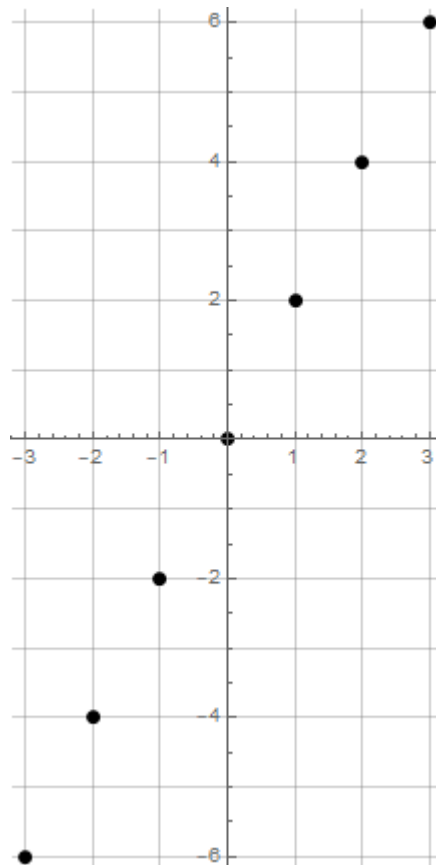
d) ○ $\overline{A} \cup \overline{B}$

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) ○ $\{(x, x^2) : x \in Z \land -3 \le x \le 3\}$

b) ◉ $\{(x, 2x) : x \in Z \land -3 \le x \le 3\}$

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

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

e) ○ $\{(x, \sin(\pi x)) : x \in Z \land -3 \le x \le 3\}$

f) ○ $\{(x, \sqrt{9 - x^2}) : x \in Z \land -3 \le x \le 3\}$

Question 10

$P(\{2, 8\}) \cap P(\{2, -2, 8\}) =$

a) ○ $\{2, 8, -2\}$

b) ○ $\{\, \emptyset, \{2\}, \{8\}, \{2, 8\}\, \}$

c) ○ $\{\, \{8\}\, \}$

d) ◉ $\{2, 8\}$

e) ○ $\{\, \{-2\}\, \}$

f) ○ $\{\, \{8\}, \{2, 8\}\, \}$