PRINTABLE VERSION

Quiz 3

You scored 80 out of 100

Question 1

Your answer is CORRECT.

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

a) $\{\heartsuit\}$

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

c) Z

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

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

f) No set A will make this true.

Question 2

Your answer is INCORRECT.

The statement $A \cap B \neq \emptyset$ implies which of the following?

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

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

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

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

Question 3

Your answer is CORRECT.

Suppose $|S| = 5$ and $|S \times T| = 10$. What is the cardinality of T?

a) $|T| = 7$

b) $|T| = 3$

c) $|T| = 10$

d) $|T| = 2$

e) $|T| = 50$

Question 4

Your answer is CORRECT.

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

a) $|T| = 4$

b) $|S| = 4$

c) $|S| = 16$

d) $|S| = 64$

e) $|S| = 2^4$

Question 5

Your answer is CORRECT.

Is it possible for $|P(S)| = 10$?

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

b) This is true. It always happens!

c) This is impossible! It never happens!

Question 6

Your answer is CORRECT.

Consider the set S defined below:

$$S = \{n \in N : n^2 \in N\}$$

Which of the following is true?

a) $S = \emptyset$

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

c) $S = N$

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

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

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

$$S \not\subseteq T$$

then which of the following statements must be true?

a) $\forall x \in U,\ P(x) \not\Rightarrow Q(x)$

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

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

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

e) $\forall x \in U,\ Q(x) \not\Rightarrow P(x)$

Question 8

Your answer is CORRECT.

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

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

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

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

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

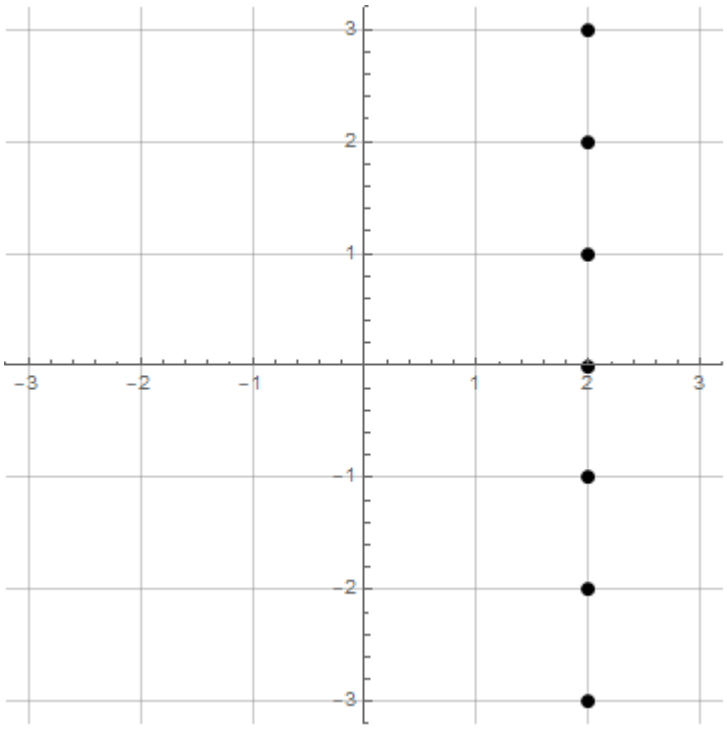
d) $\overline{A} \cup \overline{B}$

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

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

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

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

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

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

Question 10

Your answer is INCORRECT.

$P(\{1, 6\}) \cap P(\{1, -3, 6\}) =$

a) $\{1, 6, -3\}$

b) ○ $\{\{-3\}\}$

c) ◉ $\{1, 6\}$

d) ○ $\{\emptyset, \{1\}, \{6\}, \{1, 6\}\}$

e) ○ $\{\{6\}\}$

f) ○ $\{\{6\}, \{1, 6\}\}$