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) 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 $|S| = 7$ and $|S \times T| = 28.$ What is the cardinality of T?

a) $|T| = 3$

b) $|T| = 28$

c) $|T| = 4$

d) $|T| = 196$

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) $|T| = 4$

b) $|S| = 2^4$

c) $|S| = 16$

d) $|S| = 64$

e) $|S| = 4$

Question 5

Your answer is CORRECT.

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

a) This is impossible! It never happens!

b) This is true. It always happens!

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

Question 6

Your answer is INCORRECT.

Consider the set S defined below:

$$S = \{n \in N : n - 1 \text{ is even } \}$$

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

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

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

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

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

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

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

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

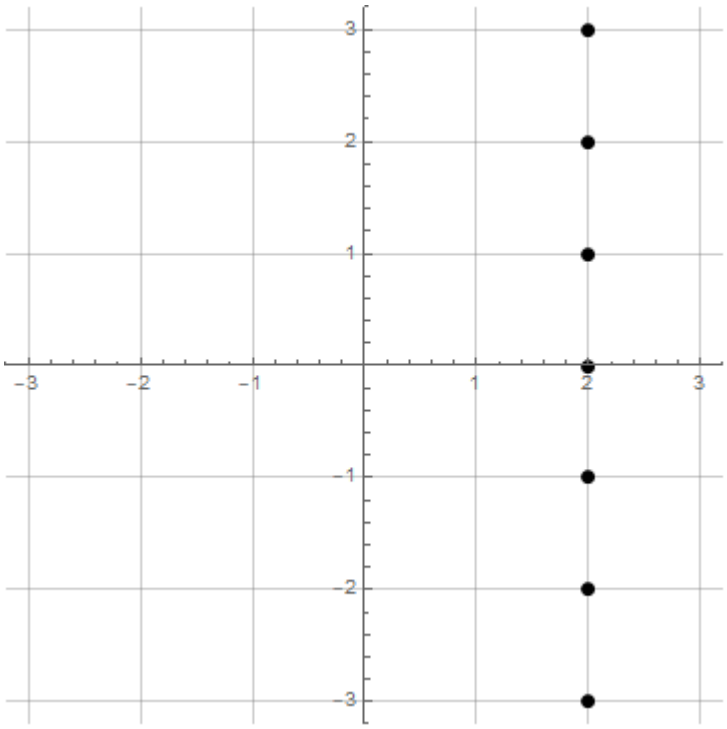
d) $\overline{A} \cup B$

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

Question 9

Your answer is CORRECT.

Consider the image shown:



Which set of points is depicted in the image above?

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

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

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

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

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

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

Question 10

Your answer is INCORRECT.

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

a) ○ $\{\ \{4\},\ \{2,4\}\ \}$

b) ○ $\{\ \{-3\}\ \}$

c) ○ $\{2, 4, -3\}$

d) ○ $\{\ \{4\}\ \}$

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

f) ◉ $\{2, 4\}$