Math 112 - Quiz 2

January 24, 2019

Name key

Score _____

Show all work to receive full credit. Supply explanations when necessary.

1. (2 points) List all of the subsets of $\{1, 3, 5\}$. THERE ARE $2^3 = 8$ OF THEM.

ϕ, $\{1\}$, $\{3\}$, $\{5\}$, $\{1,3\}$, $\{1,5\}$, $\{3,5\}$, $\{1,3,5\}$

2. (1 point) Let A be the set of letters of the word *MISSISSIPPI*. What is the only subset of A that is NOT a proper subset?

A ITSELF, $\{M, I, S, P\}$.

EVERY OTHER SUBSET IS PROPER.

3. (1 point) Suppose that A is a set with $n(A) = 10$. How many subsets does A have? Do not attempt to list them.

$2^{10} = 1024$ SUBSETS

4. (1 points) Explain why $\{0, 1, 2, 3, 4\}$ is NOT a subset of $\mathbb{N}$.

0 IS NOT AN ELEMENT OF $\mathbb{N}$.

Turn over.

5. (5 points) In this problem, the universal set is the set of natural numbers, $\mathbb{N}$.
Also, let $A = \{x | x \in \mathbb{N} \text{ and } -3 < x < 4\}$,
$B = \{x | x \in \mathbb{N} \text{ and } x > 7\}$, and
$C = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$.

$A = \{1, 2, 3\}$, $B = \{8, 9, 10, 11, \ldots\}$,

$C = \{1, 2, 3, \ldots, 10\}$

(a) Write A in roster notion.

$A = \{1, 2, 3\}$

(b) Determine B'.

$B' = \{1, 2, 3, 4, 5, 6, 7\}$

(c) Determine $A \cup C$.

$A \cup C = C = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

(d) Determine $B \cap C$.

$B \cap C = \{8, 9, 10\}$

(e) Determine $A \cap \emptyset$.

$A \cap \phi = \phi$