Math 112 - Quiz 2

January 31, 2018

Name _____key_____

Score _____

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

1. (2 points) List all of the subsets of $\{3, 6, 9\}$.

$\{3, 6, 9\}$ $\{3\}, \{6\}, \{9\}$ THERE ARE 8
$\{3, 6\}, \{3, 9\}, \{6, 9\}$ ϕ SUBSETS!

2. (2 points) A certain set has 5 elements. How many subsets does it have? How many of those subsets are proper subsets?

$2^5 = \underline{\underline{32 \text{ SUBSETS}}}$. $\underline{\underline{31 \text{ ARE PROPER}}}$.

3. (4 points) Let $X = \{1, 3, 5, 7, 9\}$ and $Y = \{1, 2, 3, 4, 5\}$, and think of X and Y as subsets of the universal set $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. Determine each of the following.

(a) $n(Y) = 5$

(b) $X' = \{2, 4, 6, 8\}$

(c) $X \cup Y = \{1, 2, 3, 4, 5, 7, 9\}$

(d) $Y' \cup \emptyset = Y' = \{6, 7, 8, 9\}$

4. (2 points) Refer to the set Y defined in the problem above. Give an example of a single set A that satisfies all of the following:

$$A \subseteq \mathbb{N}, \qquad A \cong Y, \qquad 13 \in A, \qquad 7 \notin A$$

SET OF
NATURAL #'S WITH 5 ELEMENTS, 13 IS ONE OF THEM,
BUT 7 IS NOT.

$\{1, 2, 3, 4, 13\}$

THERE ARE LOTS
OF POSSIBLE
ANSWERS.