

Math 099 - Quiz 3

September 17, 2018

Name key

Score _____

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

1. (10 points) Let

$$U = \{x \mid x \in \mathbb{N} \text{ and } x < 25\} = \{1, 2, 3, \dots, 24\}$$

$$X = \{x \mid x \in \text{the set of even natural numbers less than 21}\} = \{2, 4, 6, \dots, 20\}$$

$$Y = \{x \mid x \in \mathbb{N} \text{ and } 9 \leq x < 22\} = \{9, 10, 11, \dots, 21\}$$

Determine each of the following.

$$(a) (X \cap Y)' = \{10, 12, 14, 16, 18, 20\}' =$$

$$= \{1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 13, 15, 17, 19, 21, 22, 23, 24\}$$

$$(b) X' = \{1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 22, 23, 24\}$$

$$(c) Y' = \{1, 2, 3, 4, 5, 6, 7, 8, 22, 23, 24\}$$

$$(d) X' \cup Y' = \text{Same as (a)}$$

$$(e) Y - X = \{9, 11, 13, 15, 17, 19, 21\}$$