# Math 112 - Quiz 2

February 8, 2017

Name key

Score _____

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

1. (2 points) Let $S = \{x, y\}$. List all subsets of $S$.

$\{x, y\}$, $\{x\}$, $\{y\}$, $\phi$

2. (6 points) Let $U = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$, $A = \{1, 2, 4, 8\}$, and $B = \{1, 2, 3, 4\}$.

   (a) Is it true that $B \subseteq A$? If not, explain why.

No, 3 is in B but not in A.

   (b) Determine $A \cup B$.

$\{1, 2, 3, 4, 8\}$

   (c) Determine $A \cap B'$.

$B' = \{0, 5, 6, 7, 8, 9\}$ $A \cap B' = \{8\}$

   (d) Give an example of a subset of $A$ that is **not** a proper subset.

$\{1, 2, 4, 8\}$ is the only example

   (e) Which of the following is **not** a subset of $B$? Circle a single choice.

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

   (f) Determine $n(A')$.

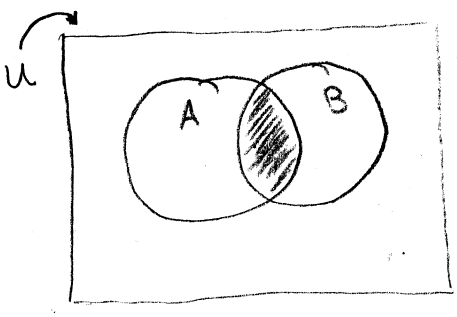
$A' = \{0, 3, 5, 6, 7, 9\}$ $n(A') = 6$

3. (1 point) Give examples of two sets $X$ and $Y$ such that $X \subseteq Y$ **and** $Y \subseteq X$.

This means they are equal

e.g., $X = \{1, 2\}$, $Y = \{1, 2\}$

4. (1 point) Sketch a Venn diagram that illustrates $A \cap B$.




$A \cap B$ is shaded.