There are 4 problems worth 20 points on 1 page of the quiz.

For questions 1 and 2 let $A$ be the set $A = \{b, c, \{d\}\}$.

1. (8 points) TRUE or FALSE:
   
   (a) $b \in A$.
   (b) $b \subset A$.
   (c) $\{\} \subset A$.
   (d) $\{b, c\} \in A$.
   (e) $\{c, e\} \subset A \cup \{e\}$.
   (f) $d \in A$.
   (g) $A \subset A$.
   (h) $A \subset \{b, c, d, e\}$.

2. (4 points) List the elements of $P(A)$.

3. (4 points) Let $A$ be the set of all people whose birthdays are in February. Let $B$ be the set of all people who like chocolate cake. Use $A$, $B$, and any set operations to answer the following questions.

   (a) What is the set of all people who both like chocolate cake and have a birthday in February?

   (b) What is the set of all people who have a birthday in February but don’t like chocolate cake?

4. (4 points) Express the following subsets using set builder notation, which is $\{\ldots \mid \ldots\}$.

   (a) The subset of even integers in $\mathbb{Z}$, the set of all integers.

   (b) The subset of rational numbers in $\mathbb{R}$, the set of all real numbers.