1. Recall our definition of function from $X$ into $Y$:

The statement that $f$ is a function from $X$ into $Y$ means that

1. $f$ is a subset of $X \times Y$;
2. if $p$ is an element of $X$, then there is an element of $f$ so that its
   first coordinate is $p$;
3. if $(a, b)$ is an element of $f$ and $(a, c)$ is an element of $f$, then
   $b = c$.

Consider the following example sets

$X = \{a, 2, \text{Beyoncé}\}$ and $Y = \{a, 14, \text{Jay Z}\}$,

and circle any of the following sets $f$ which are functions from $X$ into $Y$. If one
of the below is not a function, say which of the parts (1), (2), or (3) it violates
in the definition above.

(a) $f = \{(a, 14), (2, 14), (\text{Beyoncé}, 14)\}$
(b) $f = \{(a, 14), (2, 14)\}$
(c) $f = \{(a, a), (2, \text{Jay Z}), (\text{Beyoncé}, 14)\}$
(d) $f = \{(a, 14), (a, 2), (2, 14), (\text{Beyoncé}, 14)\}$

2. “There exists a real number $x$ with the property that $x$ is not rational.”
   (a) Translate this quoted statement into a symbolic statement.
   (b) Negate the above quoted statement in English.
   (c) What is the truth value of the original quoted statement? What is the truth
       value of the negation; aka your answer to (b)?