

1. (10 points) Your Name _____

2. (2 points) What is the difference between “i.e.” and “e.g.”?

Answer: “I.e.” means “that is”; it can be used any way you would say “that is”; especially to mean “in other words”. “E.g.” means “for example.”

3. (5 points) Let $f : A \rightarrow B$ be a function. Write the definition of “ f is surjective.”

Answer: For every $b \in B$, there exists an $a \in A$ such that $f(a) = b$.

A less specific answer, accepted for partial credit: The image $f(A)$ equals B .

4. (5 points) Write the definition of “ f is injective.”

Answer (1): If $a_1, a_2 \in A$ and $a_1 \neq a_2$, then $f(a_1) \neq f(a_2)$.

Another way to say the same thing: For all $a_1, a_2 \in A$, $a_1 \neq a_2$ implies $f(a_1) \neq f(a_2)$.

Answer (2): If $a_1, a_2 \in A$ and $f(a_1) = f(a_2)$, then $a_1 = a_2$.

Another way to say the same thing: For all $a_1, a_2 \in A$, $f(a_1) = f(a_2)$ implies $a_1 = a_2$.

Note: These two answers, (1) and (2), are contrapositives of each other, so they are logically equivalent. It’s important to know both because each one is useful in different circumstances.