Extra Credit 3.
Let X, Y, and Z be sets.

Notation 2.1. Let f be a function from X to Y. Then, if x is an element of X, we will as usual write $f(x)$ for the element of Y that f assigns to x.

Now let g be a function from Y to Z.

Remark 2.2. Based on the notation above, you know what $g(y)$ means when y is an element of Y. Thus, you know what $g(f(x))$ means when x is an element of X.

Definition 2.3. We will define the *composition* of g and f to be the assignment from X to Z which takes any $x \in X$ and assigns to it $g(f(x))$.
We will write gf, or $g \circ f$, for the composition of g and f.

True or false: If f and g are bijections, then the composition gf is also a bijection.
If this is true, tell me why, giving a full but concise explanation.
If it is false, please explain why; for instance, by providing a counter-example.