

Math 3520 - Quiz 5

Name: _____

1. Prove the following: if $f : A \rightarrow B$ and $g : B \rightarrow C$ are onto then $g \circ f$ is onto.
2. Prove the following: Let $f : A \rightarrow B$ and $g : B \rightarrow C$. If $g \circ f$ is onto then f is onto.
3. Show $f : (1, \infty) \rightarrow (-\infty, -3)$ defined by $f(x) = \frac{3x}{1-x}$ is a bijection.
4. Let $|A| = |B| = 3$. How many functions from A to B have inverses.
5. Prove if f has an inverse then f is a bijection.
6. Let $f(x) = \sin(x)$. Compute
 - (a) $f(-\infty, \infty)$
 - (b) $f^{-1}(0, \pi)$
 - (c) $f \circ f^{-1}(0, \pi)$
 - (d) $f^{-1} \circ f(0, 1)$