HOMEWORK 9

- Ch 9:

  1) Prove the function $f : \mathbb{R} - \{3\} \to \mathbb{R} - \{2\}$ defined by $f(x) = \frac{2x+7}{x-3}$ is bijective.

  2) Prove the function $g : \mathbb{R} \to \mathbb{R}$ defined by $g(x) = 3x^2 - 2x - 1$ is neither injective nor surjective.

- For problems 3 through 8 let $f : A \to B$ and $g : B \to C$ be functions.

  3) Prove if $g \circ f$ is injective, then f is injective.

  4) Prove if $g \circ f$ is surjective, then g is surjective.

  5) Disprove if $g \circ f$ is injective, then g is injective.

  6) Disprove if $g \circ f$ is surjective, then f is surjective.

  7) Prove if $g \circ f$ is bijective and f is surjective, then g is injective

  8) Prove if $g \circ f$ is bijective and g is injective, then f is surjective