MATH 113: DISCRETE STRUCTURES
HOMEWORK DUE MONDAY WEEK 3

Problem 1. Let $f\colon A \to B$ be a function. Show that a function $g\colon B \to A$ such that $f \circ g = \mathrm{id}_B$ exists if and only if f is surjective.

Problem 2. Suppose that f and g are composable functions.
(a) If $g \circ f$ is surjective, does g have to be surjective? Does f have to be surjective?
(b) If $g \circ f$ is injective, does g have to be injective? Does f have to be injective?
(Explain all of your reasoning.)