MATH 250 HANDOUT 13 - INVERSES

Let $f \colon A \to B$ and $g \colon B \to C$ be functions. Prove or disprove each of the following:

(1) If f and g are invertible, then $g \circ f$ is invertible..
(2) If $g \circ f$ is invertible, then f and g are invertible.
(3) If $g \circ f$ is invertible, then f is invertible.
(4) If $g \circ f$ is invertible, then g is invertible.
(5) If $g \circ f$ is an injection and g is invertible, then f is an injection.