

Justify all answers!

**(6 pts)**

(1) Let  $f : A \rightarrow B$  and  $g : B \rightarrow C$ .

(a) [+4] Prove that if  $g \circ f$  is an injection, then  $f$  is an injection.

(b) [+2] True or false: if  $f$  is an injection and  $g \circ f$  is an injection, then  $g$  is an injection.