1] Please complete the following definition: we say that a function $f : X \rightarrow Y$ is injective if

2] Let $X$, $Y$, and $Z$ be sets, and let $f : X \rightarrow Y$ and $g : Y \rightarrow Z$ be functions.
   Are the following statements true or false? Please circle your answers.

   A] If both $f : X \rightarrow Y$ and $g : Y \rightarrow Z$ are injective, then $g \circ f : X \rightarrow Z$ must be injective.  TRUE  |  FALSE
   B] If $g \circ f : X \rightarrow Z$ is injective, then both $f : X \rightarrow Y$ and $g : Y \rightarrow Z$ must be injective.  TRUE  |  FALSE
   C] If $g \circ f : X \rightarrow Z$ is injective, then $f : X \rightarrow Y$ must be injective.  TRUE  |  FALSE
   D] If $g \circ f : X \rightarrow Z$ is injective, then $g : Y \rightarrow Z$ must be injective.  TRUE  |  FALSE

3] Provide a complete proof for one of the questions that you answered with TRUE.