Comment on 15b)

i) As the problem is stated in the text, $f \circ g$ might not be defined on I. This is because some value $g(x)$ might be outside I, in which case $f(g(x))$ might not be defined.
So assume domain$(f) =$ domain$(g) = I$ and that range$(g) \subseteq I$. Then $f \circ g$ will be defined on I.

ii) The chain rule, from calculus, might give you some insight about the problem. But you can't actually use the chain rule in any solution because we are not assuming f and g are differentiable.

iii) If you think the statement is false and are trying to construct a counterexample, then your countexample should involve 2 specific functions f, g and a specific interval I. The domains and ranges should satisfy the condition given above, in i).