

# Function

1. Prove that the following function  $f: \mathbb{R} \rightarrow \mathbb{R}$  is not injective and not surjective.

$$f(x) = e^{3y^2+2} + 1$$

NOTE  $g(x) = e^x + 1$  is not surjective for  $g: \mathbb{R} \rightarrow \mathbb{R}$   
since  $e^x > 0$ .

$h(x) = 3y^2 + 2$  is not injective for  $h: \mathbb{R} \rightarrow \mathbb{R}$   
since  $h(1) = h(-1)$ .

Since  $f(x) = g(h(x))$ ,

1)  $f(x) > 0$   
and 2)  $f(1) = f(-1)$  } not inj/surj.