

NAME: _____ Score _____/10

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

1. The symbol f^{-1} is read as **f inverse**.
2. The inverse of a function is the inverse with respect to **composition**.
3. If a horizontal line may be drawn so that it intersects the graph of a function in more than one point, then the function **does not** have an inverse.
4. Find the inverse of the function f whose rule is $f(x) = \frac{x-1}{5}$. Show each step in a neat and organized fashion.

$$f(x) = \frac{x-1}{5}$$

$$y = \frac{x-1}{5}$$

$$x = \frac{y-1}{5}$$

$$5x = y - 1$$

$$5x + 1 = y$$

$$f^{-1}(x) = 5x + 1$$

5. Without finding the inverse of either f or g , verify that the two functions f and g whose rules are $f(x) = 2x$ and $g(x) = \frac{x}{2}$ are inverses of each other.

$$f \circ g(x) = f(g(x)) = f\left(\frac{x}{2}\right) = 2\left(\frac{x}{2}\right) = x$$

$$g \circ f(x) = g(f(x)) = g(2x) = \frac{2x}{2} = x$$