

QUIZ 1

Math 1110, Section 2

February 10, 2017

Name: _____

- (1) If $f(x) = 3x + 4$, $g(x) = 2x - 1$, and $h(x) = x^2$, write a formula for $f \circ g \circ h$. What is the domain and range of this function?

SOLUTION:

$$\begin{aligned}(f \circ g \circ h)(x) &= f(g(h(x))) \\&= f(g(x^2)) \\&= f(2(x^2) - 1) \\&= f(2x^2 - 1) \\&= 3(2x^2 - 1) + 4 \\&= 6x^2 - 3 + 4 \\&= 6x^2 + 1.\end{aligned}$$

The domain is all real numbers, and the range is $[1, \infty)$.

- (2) Is the function $f(x) = \begin{cases} 2x + 6, & x \leq -3 \\ x + 4, & x > -3 \end{cases}$ one-to-one? Why or why not?

SOLUTION: This function is one-to-one; the easiest way to see this is to note that its graph (pictured below) passes the horizontal line test.

