§ 6.1 Composite Functions

Composition of Functions:

If f and g are functions, then the <u>composite</u> function or <u>composition</u>, of g and f is:

$(g \circ f)(x) = g[f(x)]$ (Note: this is read "g of f of x".)

for all x in the domain of f such that f(x) is in the domain of g.

Example 1: Let $f(x) = x^2 + 3x - 1$ & $g(x) = 2x + 3$

Find $(f \circ g)(x)$ and $(g \circ f)(x)$.

Example 2: Let $f(x) = 2x^2 - 3$ and $g(x) = 4x$

Find $(f \circ g)(1)$ and $(g \circ f)(1)$ and $(f \circ f)(-2)$.

Show That Two Composite Functions Are Equal

Example 3:

If $f(x) = 3x - 4$ and $g(x) = \frac{1}{3}(x+4)$

Show that $(f \circ g)(x)$ and $(g \circ f)(x) = x$