Bellwork Hon Alg 2 Thursday, September 29, 2016

Simplify each composite function as much as possible.

1. Given: $f(x) = 2x - 13$ $g(x) = x^2 + 3x - 7$

a) Find $f(g(x))$.

b) Find $(g \circ f)(x)$

2. Given: $f(x) = 2x + 1$ $g(x) = \frac{5x}{6x - 8}$

a) Find $g(f(x))$.

b) Find $(f \circ g)(x)$

Bellwork Hon Alg 2 Thursday, September 29, 2016 Answers

Simplify each composite function as much as possible.

1. Given: $f(x) = 2x - 13$ $g(x) = x^2 + 3x - 7$

a) Find $f(g(x))$.

$= 2(x^2+3x-7) - 13$

$= 2x^2 + 6x - 14 - 13$

$= 2x^2 + 6x - 27$

b) Find $(g \circ f)(x)$

$= (2x-13)^2 + 3(2x-13) - 7$

$= 4x^2 - 52x + 169 + 6x - 39 - 7$

$= 4x^2 - 46x + 123$

2. Given: $f(x) = 2x + 1$ $g(x) = \frac{5x}{6x - 8}$

a) Find $g(f(x))$.

$= \frac{5(2x+1)}{6(2x+1) - 8} = \frac{10x+5}{12x+6-8}$

$= \frac{10x+5}{12x-2}$

b) Find $(f \circ g)(x)$

$= 2\left(\frac{5x}{6x-8}\right) + 1$

$= \frac{5x}{3x-4} + 1 = \frac{5x}{3x-4} + \frac{3x-4}{3x-4}$

$= \frac{8x-4}{3x-4}$