Evaluating Functions Review

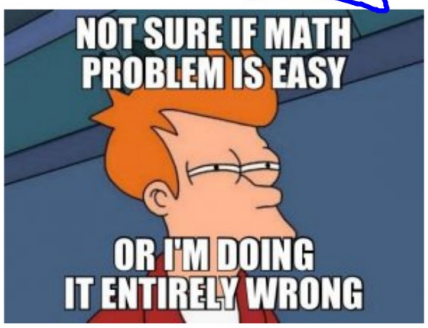
$f(x) = 2x + 6$

Find f(5)

$f(5) = 2(5) + 6$

$= 10 + 6$

$= \boxed{16}$



$g(x) = x^2 - 4x + 1$

Find g(4)

$g(4) = (4)^2 - 4(4) + 1$

$= \boxed{1}$

Compositions of Functions

Notation:

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

"f of g of x"

$(g \circ h)(x)$ $g(h(x))$

"g of h of x"

$(f \circ f)(x)$ $f(f(x))$

"f of f of x"

Given: $f(x) = 2x + 5$ $g(x) = 3 - 7x$ $h(x) = x^2 + 10$

1. Find: $(f \circ g)(x) = f(g(x))$

$f(g(x)) = 2(3-7x)+5$

$= 6 - 14x + 5$

$= -14x + 11$

Find: $g(h(x))$

$g(h(x)) = 3 - 7(x^2+10)$

$= 3 - 7x^2 - 70$

$= -7x^2 - 67$

Find: $(f \circ f)(x)$

$(f \circ f)(x) = 2(2x+5)+5 = 4x + 10 + 5$

$= 4x + 15$

Given $f(x) = 6x - 14$ $g(x) = 9x + 5$

⇒ Start on inside and work your way out

Find: $g(f(3))$

$f(3) = 6(3) - 14$

$= 18 - 14$

$= 4$

$g(f(3)) = 9(4) + 5$

$= 36 + 5$

$= 41$

Find: $(f \circ g)(-2) = f(g(-2))$

$g(-2) = 9(-2) + 5$

$= -18 + 5$

$= -13$

$f(g(-2)) = 6(-13) - 14$

$= -92$

Homework is Page 1.6 in Packet