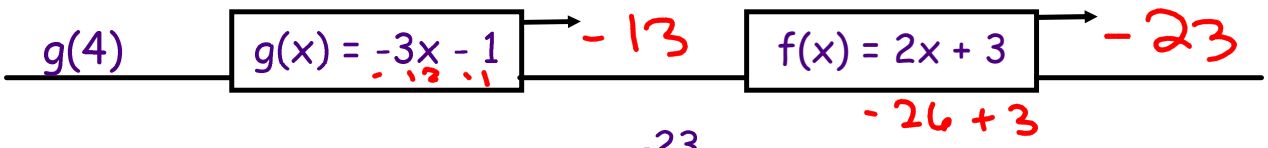
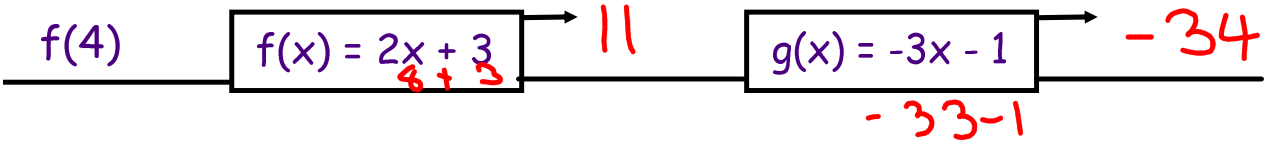
Double Function Machine

- If $f(x) = 2x + 3$ and $g(x) = -3x - 1$, find $f(g(4))$ and $g(f(4))$.



$f(g(4)) =$ -23



$g(f(4)) =$ -34

Composition of Functions

Composition of Functions

f(g(x))

Perform function "g" on x, to find g(x). This becomes the input value that you input into function "f."

$f(x) = 3x - 4$ and $g(x) = x^2 - 1$

This answer is a number.

What is the value of f(g(-3))?

$g(-3) = (-3)^2 - 1 = 9 - 1 = 8$

$f(8) = 3(8) - 4 = 20$

$f(g(-3)) = 20$

Write a simplified expression for f(g(x)).

$f(x) = 3(x^2 - 1) - 4$

$= 3x^2 - 3 - 4 = 3x^2 - 7$

These answers are expressions.

Write a simplified expression for g(f(x)).

$g(x) = (3x-4)^2 - 1$

$= (3x-4)(3x-4) - 1$

$= 9x^2 - 12x - 12x + 16 - 1 = 9x^2 - 24x + 15$

$f(x) = 4x^{-1}$ $g(x) = 5x - 2$

Find f(g(2)) $g(2) = 5(2) - 2 = 8$ $f(8) = 4(8)^{-1} = \frac{4}{8} = \frac{1}{2}$

Find g(f(2)) $f(2) = 4(2)^{-1} = \frac{4}{2} = 2$ $g(2) = 5(2) - 2 = 8$

Simplify the composition and give the domain.

a.) f(g(x)) $\rightarrow 4(5x-2)^{-1} = \frac{4}{5x-2}$

b.) g(f(x)) $\rightarrow 5(4x^{-1}) - 2 = \frac{5 \cdot 4}{x} - 2 = \frac{20}{x} - 2$

c.) f(f(x))

d.) g(g(x))

From the function worksheet.

7) $h(t) = 2t - 3$
$g(t) = 3t - 1$
Find $5h(t) + 4g(t)$

$5(2t-3) + 4(3t-1)$

11) $f(x) = x^2 + 3$
$g(x) = 3x + 5$
Find $f(g(x))$ $\longrightarrow (3x+5)^2 + 3$

$(3x+5)(3x+5) + 3$

$9x^2 + 15x + 15x + 25 + 3$

$f(g(x)) = 9x^2 + 30x + 28$

p. 424/ #3 - 8, 15-20 , 24 - 26, 32 - 34, 41, 42, 44 - 46, 52 - 54, 83, 84 - due Wed. Feb 5

Function Notation Review.Practice worksheet - due Thurs Feb 6

6.1 and 6.2 practice quiz. Quiz tomorrow

p. 432/ # 3 – 6, 12 – 17, 20 – 27, 36, 37, 43, 44 and p. 436/ #4 - due Thurs Feb 6

p. 435 - complete the activity, then do # 1 - 4 - do this in notebook (page 86) Title="Operations w/ Functions - Calculator"