Operations on Functions

Evaluating Functions

* this is just substitution

Ex) $h(a) = -a+4$

Find $h(-1) = -(-1)+4$

$h(-1) = 1+4$

$h(-1) = 5$

Try this!

$k(a) = 3a+4$

Find $k(6)$

$f(n) = 5^{-n} + 2$

$f(-2) = 5^{-(-2)} + 2$

$f(-2) = 5^{2} + 2$

$f(-2) = 25 + 2$

$f(-2) = 27$

x y

$(-2, 27)$

$f(x) = 2^{x} + 6$

$f(-1) = 2^{-1} + 6$

$f(-1) = \frac{1}{2} + \frac{6}{1} \cdot \frac{2}{2}$

$f(-1) = \frac{1}{2} + \frac{12}{2}$

$\boxed{f(-1) = \frac{13}{2}}$

Ex

$f(x) = x^2 + 3 \qquad g(x) = 3x - 10$

find $(f+g)(x) = x^2 + 3 + 3x - 10$

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

find $(f+g)(10) = 10^2 + 3(10) - 7$

$= 100 + 30 - 7$

$= 130 - 7$

$= 123$

Subtraction

$(f-g)(x) = f(x) - g(x)$

* don't forget to distribute the neg.

Ex $f(x) = 2x - 9 \qquad g(x) = 3x - 12$

$(f-g)(x) = 2x - 9 - (3x - 12)$

$= 2x - 9 - 3x + 12$

$= -x + 3$

Multiplying

$(f \cdot g)(x) = f(x) \cdot g(x)$

often requires FOIL

Ex $f(x) = x - 4 \quad g(x) = 5x - 7$

$(f \cdot g)(x) = (x-4)(5x-7)$

$= 5x^2 - 7x - 20x + 28$

$= \boxed{5x^2 - 27x + 28}$

Division

$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)}$

Ex $f(x) = 4x + 5 \quad g(x) = 4x - 7$

$\left(\frac{f}{g}\right)(x) = \boxed{\frac{4x+5}{4x-7}}$

$$\frac{3n+4}{3n}$$

$$\frac{2x+4}{2x}$$

$$\frac{2(x+2)}{2x}$$

$|-x+2|$

$|-11$ odd

$13-21$ odd

$33-41$ odd