Combining Functions notes

1. Simplify: $f(x) = 2x + 4$ & $g(x) = 3x - 7$.

FIND: $f(x) + g(x)$

- $f(x) + g(x) = \underline{2x} + \underline{4} + \underline{3x} - \underline{7}$

$$\boxed{f(x) + g(x) = 5x - 3}$$

2. $f(x) = 6x^2 - 3x + 5$ & $g(x) = 4x^2 + 5x - 8$

FIND: $g(x) - f(x)$

- $g(x) - f(x) = 4x^2 + 5x - 8 - (6x^2 - 3x + 5)$

$$-1(6x^2 - 3x + 5)$$

$$\underline{4x^2} + \underline{5x} - \underline{8} - \underline{6x^2} + \underline{3x} - \underline{5}$$

$$\boxed{g(x) - f(x) = -2x^2 + 8x - 13}$$

when you are subtracting the 2nd function must be in parentheses

3. $f(x) = 2x + 4$ & $g(x) = 3x - 7$

FIND: $4f(x) + 5g(x)$

$$4f(x) + 5g(x) = 4(2x + 4) + 5(3x - 7)$$

$$\underline{8x} + \underline{16} + \underline{15x} - \underline{35}$$

$$\boxed{4f(x) + 5g(x) = 23x - 19}$$

4. $f(x) = 4x^2 + 2$; $g(x) = 3x^3$

FIND: $g(x) \cdot f(x)$

$$g(x) \cdot f(x) = 3x^3(4x^2 + 2)$$

$$\boxed{g(x) \cdot f(x) = 12x^5 + 6x^3}$$

5. $g(x) = 2^x$; $h(x) = 2$

FIND: $g(x) \div h(x)$, $\frac{g(x)}{h(x)}$

$$\frac{g(x)}{h(x)} = \frac{2^x}{2^1} = 2^{x-1}$$

$$\boxed{\frac{g(x)}{h(x)} = 2^{x-1}}$$