Guided notes on Combining functions Day 1 Ms. Rogers

Name: _____

Date:

Goal: Combine functions by adding and subtracting

Like Terms: Same variables raised to the same power

Remember: when subtracting integers you must add the opposite

$-5+\bar{2}$

$f(x)+g(x)$

How to Add and Subtract Functions:

Example: If $f(x) = 2x + 3$ *and* $g(x) = 3x^2 - 2x + 6$ *find* $(f+g)x$ *and* $(f+g)(2)$

$2x+3+3x^2-2x+6$

$3x^2+2x-2x+3+6$

$3x^2+9$

$(f+g)(x) = 3x^2+9$

$(f+g)(2) = 3(2)^2+9$

$3 \cdot 4 + 9$

$12+9$

21

Example 2: If $h(x) = 3x - 1$ and $y(x) = -5x + 3$, what is:

$(y - h)(x) =$

$-5x+3-(3x-1)$

$-5x+3-3x+1$

$-5x-3x+3+1$

$-8x+4$

$(h - y)(x) =$

$3x-1-(-5x+3)$

$3x-1+5x-3$

$3x+5x-1-3$

$8x-4$

Example 3: $f(x) = 3x^2 + 2x - 1$ $g(x) = -x^2 + 7x - 6$

3a. *Find* $(f + g)(x) = f(x) + g(x)$

$3x^2+2x-1+-x^2+7x-6$

$3x^2+-x^2+2x+7x-1-6$

$2x^2+9x-7$

3b. *Find* $(f + g)(2)$

$2x^2+9x-7$

$2(2^2)+9(2)-7$

$2\cdot4+18-7$

$8+18-7$

$26-7$

19

Example 3: $f(x) = 3x^2 + 2x - 1$ $g(x) = -x^2 + 7x - 6$

Find $(g - f)(-2)$

$(g-f)(x)$

$-x^2+7x-6-(3x^2+2x-1)$

$-x^2+7x-6-3x^2-2x+1$

$-x^2-3x^2+7x-2x-6+1$

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

$-4x^2+5x-5$

$-4(-2)^2+5(-2)-5$

$-4\cdot 4+-10-5$

$-16+-10-5$

$-26-5$

$\boxed{-31}$

Example 4: If $f(x) = 3x + 5$, ***what is*** $(2f)(x)$?

$2(3x+5)$

$6x+10$

What is $(2f)(3)$?

$6x+10$

$6(3)+10$

$18+10=28$