

Bellwork: Solve the inequality. Write your answer in interval notation.

$(5, 13]$

$$-7 < 3 - 2x \leq 1$$

$$\begin{array}{r} -3 \quad -3 \quad -3 \\ -10 < -2x \leq -2 \\ \hline -5 < x \leq -1 \end{array}$$

$$\frac{1 \leq x < 5}{5 > x \geq 1}$$

$$5 > x \geq 1$$

$$\boxed{[1, 5)}$$

Homework 8.3 Solutions

Lesson 8.4 Objectives:

I can build new functions by combining functions

I can compare key features of functions

Functions can be added, subtracted, multiplied or divided to form new functions. Consider the following examples for the functions $a(x) = x^2 + 2x$ and $b(x) = 7x - 5$

$$a(x) + b(x) =$$

$$x^2 + 2x + 7x - 5$$

$$x^2 + 9x - 5$$

$$a(x) \cdot b(x) =$$

$$(x^2 + 2x)(7x - 5)$$

$7x$	$7x^3$	$14x^2$
-5	$-5x^2$	$-10x$

$$7x^3 + 9x^2 - 10x$$

$$x^2 + 2x - 7x - 5 \text{ BAD}$$

$$a(x) - b(x) =$$

$$x^2 + 2x - (7x - 5)$$

$$x^2 + 2x - 7x + 5$$

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

$$a(x) \div b(x) =$$

$$\frac{x^2 + 2x}{7x - 5}$$

$$\frac{x(x+2)}{7x-5}$$

$$a(x) = \underline{x^2 + 2x - 7}$$

$$b(x) = -2x + 5$$

$$c(x) = x^2 + 4$$

$$d(x) = \underline{x + 3}$$

1. Find $a(x) - d(x)$

$$\begin{array}{r} x^2 + 2x - 7 - (x + 3) \\ x^2 + 2x - 7 - x - 3 \\ \hline x^2 + x - 10 \end{array}$$

2. Find $b(x) \cdot d(x)$

$$\begin{array}{r} (-2x + 5) \cdot (x + 3) \\ -2x^2 - 6x + 5x + 15 \\ \hline -2x^2 - x + 15 \end{array}$$

3. Find $a(x) + c(x)$

$$\begin{array}{r} x^2 + 2x - 7 \\ + x^2 \quad + 4 \\ \hline 2x^2 + 2x - 3 \end{array}$$

4. Find $c(x) \div d(x)$

$$\frac{x^2 + 4}{x + 3}$$