

Section 5.3: Adding and Subtracting Polynomials

Learning Targets - day 1:

Add polynomials horizontally by:

- dropping the brackets
- grouping the like terms
- combining like terms
- writing our answers in descending degree

Adding Polynomials

Adding polynomials can be accomplished with two different approaches.

In the first approach, the polynomials being added together are given to us in a **horizontal** fashion, with each polynomial enclosed in its own set of brackets:

$$\begin{aligned}(3x - 7) + (2x + 6) &= 3x - 7 + 2x + 6 \\ &= 3x + 2x - 7 + 6 \\ &= 5x - 1\end{aligned}$$

Adding Polynomials

Adding polynomials can be accomplished with two different approaches.

In the first approach, the polynomials being added together are given to us in a **horizontal** fashion, with each polynomial enclosed in its own set of brackets:

$$(3x - 7) + (2x + 6) = 3x - 7 + 2x + 6$$

We can "drop" the brackets when we are adding, and then the question will look identical to the problems we had for "combining like terms" and that is how we proceed.

Practice

drop the brackets, combine like terms, write the answer in descending degree

$$1. (x^2 + 3x - 4) + (3x^2 - x + 5)$$

$$= (x^2) + 3x - 4 + 3x^2 - x + 5$$

$$= 4x^2 + 2x + 1$$

Practice

drop the brackets, combine like terms, write the answer in descending degree

$$2. (5x - 4) + (x^2 + 6x - 1)$$

$$= (5x - 4) + (x^2 + 6x - 1)$$

$$= x^2 + 11x - 5$$

Practice

drop the brackets, combine like terms, write the answer in descending degree

$$3. (a - 5a^2 - 4) + (a^2 - 2 - 5a)$$

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

$$= -4a^2 - 4a - 6$$

Practice

drop the brackets, combine like terms, write the answer in descending degree

$$4. (-p + 10p^2 - 3) + (-2p^2 + 3p + 3)$$

$$= (-p) + 10p^2 + (-3) - 2p^2 + 3p + 3$$

$$= 8p^2 + 2p$$

You Try:

Add the following polynomials horizontally. Write your answers in descending degree:

$$1) \quad (2a - 1) + (6 - 4a) = -2a + 5$$

$$2) \quad (3x^2 - 5x + 3) + (-x^2 + 2x + 1) = 2x^2 - 3x + 4$$

Check your understanding:

Addition and Subtraction of Polynomials

Worksheet 1 - #1, 3, 7, 8, 10

Worksheet 2 - #1, 3, 7, 8, 10

Answer Key:

Worksheet #1: 1. $9x + 7$ 3. $7x + 1$
7. $8x + 8$ 8. $7x - 2$
10. $10x^2 + 5x$

Worksheet #2: 1. $10x + 8$ 3. $7x + 3$
7. $12x + 5$ 8. $6x - 2$
10. $5x^2 + 6x$