

BACK TO SCHOOL

Warm Up:

Prove the following: (show)

It doesn't mean the same thing as it does in geometry



make both sides equal by  
changing only one side

$$1(y^2 - y - 7) - (3 - 2y + 3y^2) = -2y^2 + y - 10$$

$$1y^2 - 1y - 7 - 3 + 2y - 3y^2 = -2y^2 + y - 10$$

$$-2y^2 + 1y - 10 = -2y^2 + y - 10 \quad \checkmark$$

~~Unit 1: Polynomials & Complex Numbers~~~~Operations with Polynomials~~

~~monomial~~ one term      ex:  $4$ ,  $y$ ,  $3x$ ,  $\frac{2}{3}b$

~~polynomial~~ more than one term (separated by addition or subtraction)

ex:  $2x+3$ ,  $4x^2-5x+6$

## Sum &amp; Difference

Examples:

1. Find the **difference**:  $\left(\frac{3}{2}x^2 - \frac{2}{3}x + 2\right) - \left(\frac{1}{2}x^2 + \frac{1}{3}x - 5\right)$ 

$$\begin{array}{r} \frac{3}{2}x^2 - \frac{2}{3}x + 2 \\ - \frac{1}{2}x^2 - \frac{1}{3}x + 5 \\ \hline x^2 - x + 7 \end{array}$$

2. When  $\left(\frac{3}{2}x^2 - \frac{1}{4}x - 4\right)$  is **subtracted from**  $\frac{5}{2}x^2 - \frac{3}{4}x + 1$ , what is the result?  
(turn around)

$$\begin{array}{r} \frac{5}{2}x^2 - \frac{3}{4}x + 1 \\ - \frac{3}{2}x^2 + \frac{1}{4}x + 4 \\ \hline x^2 - \frac{1}{2}x + 15 \end{array}$$

3. When  $(x^2 + 3x - 4)$  is **subtracted from**  $(x^3 + 3x^2 - 2x)$ , what is the difference?

$$\begin{array}{r} x^3 + 3x^2 - 2x \\ - x^2 - 3x + 4 \\ \hline x^3 + 2x^2 - 5x + 4 \end{array}$$

Product  
Examples:

1. Find the **product**:  $(x+4)(x^2-3x+1)$

$$\begin{array}{r} x^3 - 3x^2 + 1x \\ + 4x^2 - 12x + 4 \\ \hline x^3 + x^2 - 11x + 4 \end{array}$$

2. Express  $\left(\frac{2}{3}x-1\right)^2$  as a **trinomial**.

$$\left(\frac{2}{3}x-1\right)\left(\frac{2}{3}x-1\right)$$

$$\frac{4}{9}x^2 - \frac{4}{3}x + 1$$

	$\frac{2}{3}x$	$-1$
$\frac{2}{3}x$	$\frac{4}{9}x^2$	$-\frac{2}{3}x$
$-1$	$-\frac{2}{3}x$	$+1$

3. What is the **product** of  $\left(\frac{2}{5}x - \frac{3}{4}y^2\right)$  and  $\left(\frac{2}{5}x + \frac{3}{4}y^2\right)$ ?

4. What is the **product** of  $\left(\frac{x}{4} - \frac{1}{3}\right)$  and  $\left(\frac{x}{4} + \frac{1}{3}\right)$ ?

	$\frac{x}{4}$	$-\frac{1}{3}$
$\frac{x}{4}$	$\frac{x^2}{16}$	$-\frac{1x}{12}$
$+\frac{1}{3}$	$+\frac{1x}{12}$	$-\frac{1}{9}$

conjugate pairs

$$\left(\frac{x}{4} - \frac{1}{3}\right)\left(\frac{x}{4} + \frac{1}{3}\right)$$

$$\frac{x^2}{16} + \frac{1x}{12} - \frac{1x}{12} - \frac{1}{9}$$

$$\frac{x^2}{16} - \frac{1}{9}$$

## Homework: p. 12 #2, 7-9; p. 21 #1, 17-19

### Writing About Mathematics

2. A binomial is a polynomial with two terms and a trinomial is a polynomial with three terms. Jess said that the sum of a trinomial and binomial is always a trinomial. Do you agree with Jess? Justify your answer.

### Developing Skills

In 3–12, write the sum or difference of the given polynomials in simplest form.

7.  $(a^2b^2 - ab + 5) + (a^2b^2 + ab - 3)$

8.  $(7b^2 - 2b + 3) - (3b^2 + 8b + 3)$

9.  $(3 + 2b + b^2) - (9 + 5b + b^2)$

### Writing About Mathematics

1. Melissa said that  $(a + 3)^2 = a^2 + 9$ . Do you agree with Melissa? Justify your answer.

17.  $(y - 1)(y^2 - 2y + 1)$

18.  $(2x + 3)(x^2 + x - 5)$

19.  $3a + 4(2a - 3)$