Section 5.1: ADDING AND SUBTRACTING POLYNOMIALS

When you are done with your homework you should be able to…

- Understand the vocabulary used to describe polynomials
- Add polynomials
- Subtract polynomials
- Graph equations defined by polynomials of degree 2

WARM-UP:

Simplify:

$-6x+5y-2x^2-2y+x^2$

DESCRIBING POLYNOMIALS

A _____ is a _____ term or the _____ of two or more _____ containing _____ with _____ number _____. It is customary to write the _____ in the order of _____ powers of the _____. This is the _____ form of a _____. We begin this chapter by limiting discussion to polynomials containing _____ variable. Each term of such a _____ in _____ is of the form _____. The _____ of _____ is _____.

THE DEGREE OF ax^n

If _____ and _____ is a _____ number, the _____ of _____ is _____. The _____ of a nonzero constant term is _____. The constant zero has no defined degree.

Example 1: Identify the terms of the polynomial and the degree of each term.

a. $-4x^5 - 13x^3 + 5$

b. $-x^2 + 3x - 7$

A polynomial is _____ when it contains no _____ symbols and no _____ _____. A simplified polynomial that has exactly _____ term is called a _____. A simplified polynomial that has _____ terms is called a _____ and a simplified polynomial with _____ terms is called a _____. Simplified polynomials with _____ or more _____ have no special names. The _____ of a _____ is the _____ degree of _____ the _____ of a _____.

Example 2: Find the degree of the polynomial.

a. $5x^2 - x^8 + 16x^4$

b. -2

ADDING POLYNOMIALS

Recall that _____ _____ are terms containing _____ the same _____ to the _____ powers. _____ are added by _____ _____ _____.

Example 3: Add the polynomials.

a. $(8x-5)+(-13x+9)$

b. $(7y^3+5y-1)+(2y^2-6y+3)$

c. $\left(\frac{2}{5}x^4+\frac{2}{3}x^3\frac{5}{8}x^2+7\right)+\left(-\frac{4}{5}x^4+\frac{1}{3}x^3-\frac{1}{4}x^2-7\right)$

d.

$$\begin{array}{r} 7x^2-5x-6 \\ \underline{-9x^2+4x+6} \end{array}$$

SUBTRACTING POLYNOMIALS

We _____ real numbers by _____ the _____ of the number being _____. Subtraction of polynomials also involves _____. If the sum of two polynomials is _____, the polynomials are _____ of each other.

Example 4: Find the opposite of the polynomial.

a. $x+8$

b. $-12x^3-x+1$

SUBTRACTING POLYNOMIALS

To _____ two polynomials, _____ the first polynomial and the _____ of the second polynomial

Example 5: Subtract the polynomials.

a. $(x-2)-(7x+9)$

b. $(3x^2-2x)-(5x^2-6x)$

c. $\left(\frac{3}{8}x^2-\frac{1}{3}x-\frac{1}{4}\right)-\left(-\frac{1}{8}x^2+\frac{1}{2}x-\frac{1}{4}\right)$

d.

$$\begin{array}{r} 3x^5-5x^3+6 \\ \underline{-\left(7x^5+4x^3-2\right)} \end{array}$$

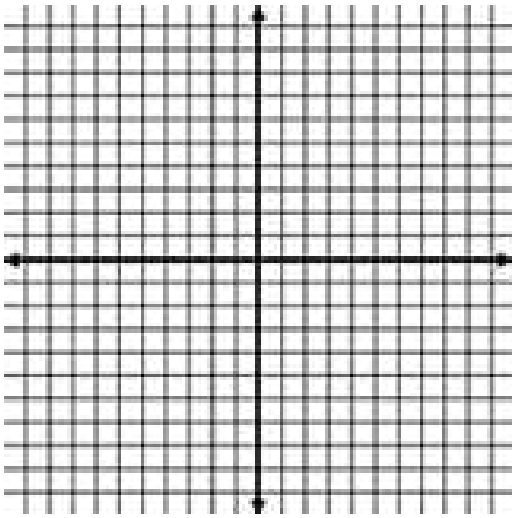
GRAPHING EQUATIONS DEFINED BY POLYNOMIALS

Graphs of equations defined by _____ of degree _____ have a _____ quality. We can obtain their graphs, shaped like _____ or _____ bowls, using the _____-_____ method for graphing an equation in two variables.

Example 3: Graph the following equations by plotting points.

a. $y = x^2 - 1$

x	$y = x^2 - 1$	(x, y)



b. $y = 9 - x^2$

x	$y = 9 - x^2$	(x, y)