Section 5.1: ADDING AND SUBTRACTING POLYNOMIALS

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

- π Understand the vocabulary used to describe polynomials
- π Add polynomials
- π Subtract polynomials
- π 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.

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

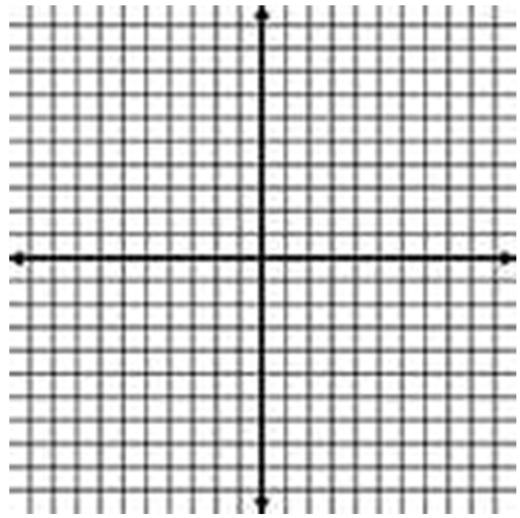
GRAPHING EQUATIONS DEFINED BY POLYNOMIALS

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)