

Adding and Subtracting Polynomials

A **polynomial** is a many termed expression. Some types of polynomials are:

Monomial - one termed expression

Binomial - Two termed expression

Trinomial - Three termed expression

A polynomial can only be classified once all like terms are combined.

The **degree** of a polynomial is the greatest degree of any term in the polynomial. When the polynomial is a monomial, the degree is the sum of all exponents on the variables.

A polynomial with one variable is said to be in **standard form** when it has no like terms and is written in order of descending exponents. The coefficient of the first term is the **leading coefficient**.

Find the leading coefficient and degree of each:

$$6x^2y^3$$

LC: 6
degree: 5
 $2+3$

$$5x^4m^3$$

LC 5
degree: 4

$$8x^4y^3$$

LC 8
degree 7

Write the polynomial in standard form and identify the degree of each term and of the polynomial.

$$6x + 2x^2 - (11 + 3x^2)$$

$$6x + 2x^2 - 11 - 3x^2$$

$$-x^2 + 6x - 11$$

trinomial
LC: -1
degree: 2

$$(9 - 2a^2b^2) + (4a^3b + 3ab^3)$$

$$4a^3b - 2a^2b^2 + 3ab^3 + 9$$

LC: 4
degree: 4
4 terms

Add or subtract the following polynomials:

1. Add $-3x^2 + 4y$ and $5x^3 - 6x^2 - 3y$

$$5x^3 - 9x^2 + y$$

2. Subtract $9x^2 - 5x$ from $-4x^2 - 8x$

Change order

$$\begin{array}{r} -4x^2 - 8x - 1(9x^2 - 5x) \\ -4x^2 - 8x - 9x^2 + 5x \\ \hline -13x^2 - 3x \end{array}$$

3. $(3y + y^3 - 5) + (4y^2 - 4y + 2y^3 + 8)$

$$3y^3 + 4y^2 - y + 3$$

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

$$\begin{array}{r} 3 - 2x + 2x^2 - 4x + 5 - 3x^2 \\ -x^2 - 6x + 8 \end{array}$$

5. $(7p + 4p^3 - 8) - (3p^2 + 2 - 9p)$

$$7p + 4p^3 - 8 - 3p^2 - 2 + 9p$$

$$4p^3 - 3p^2 + 16p - 10$$

The equations $P = 7m + 137$ and $C = 4m + 78$ represent the number of cell phones P and digital cameras C sold in m months at an electronics store. Write an equation for the total number of sales T of phones and cameras. Then predict the number of phones and cameras sold in ten months.

Find $P - C$

$$\begin{array}{r} 7m+137 - (4m+78) \\ 7m+137 - 4m-78 \\ \hline 3m+59 \end{array}$$

$$3m+59$$

$$\begin{aligned} T &= P + C \\ T &= 7m + 137 + 4m + 78 \\ T &= 11m + 215 \\ 11(10) + 215 &= 325 \\ 110 + 215 &= 325 \end{aligned}$$

Write the missing length as an expression.

$$\begin{array}{c} \overbrace{7x-4y \quad | \quad ? \quad | \quad 3x+8y} \\ \underbrace{\hspace{10em}} \\ 16x+9y \end{array}$$

$$16x+9y - (7x-4y+3x+8y)$$

$$16x+9y - (10x+4y)$$

$$16x+9y - 10x - 4y$$

$$6x+5y$$

HW: Worksheet p 213 and 215

#1-7
odds 13, 14, 17, 28, 29