

## 5-2 Polynomials

**Objective:** Add, subtract, and Multiply Polynomials.

**Polynomial:** a monomial or sum of monomials.

Remember

$$(x^2)^5 = x^{10}$$

$$x^2 \cdot x^5 = x^7$$

**Binomial**- 2 unlike terms

ie.  $xy + z^3$

**Trinomial**- 3 unlike terms

ie.  $x^2 + 3x + 1$

**Degree of a Polynomial**- The degree of the monomial with the greatest degree

$$4x^3 + 3x^2 \quad \text{degree 3} \quad 5x^5y + 4x^3y^6 \quad \text{degree 9}$$

3 2 — 6 9

I. Determine whether each is a polynomial and state the degree.

A.  $c^2 - 4\sqrt{c} - 18$

B.  $-16p^5 + (3/4)p^2q^7$

*Not a polynomial since "c" is under the radical*

5 9

*Yes it's a polynomial.  
Degree: 9*

II. Simplify

$+ -1(a^3 - 3a + 2)$

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

$$2a^3 + 5a - 7 - a^3 + 3a - 2 = a^3 + 8a - 9$$

B.  $-y(4y^2 + 2y - 3)$

$$-y \cdot 4y^2 + -1 \cdot 2y + -y \cdot -3$$

*(-4y^3) + (-2y^2) + 3y*

Note

$a+a=2a$

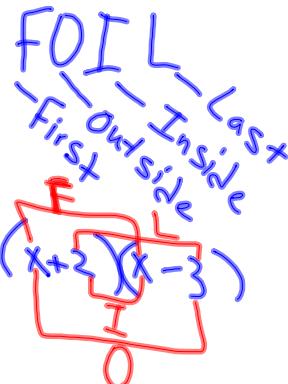
$a \cdot a=a^2$

C.  $(2p+3)(4p+1)$

$$8p^2 + 2p + 12p + 3$$

*(8p^2 + 14p + 3)*

Binomial · Binomial



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

*way #1*

$$\begin{array}{c} a^2 + 3a - 4 \\ \hline a & a^3 & 3a^2 & -4a \\ +2 & 2a^2 & 6a & -8 \\ \hline a^3 + 5a^2 + 2a - 8 \end{array}$$

E.  $(n^2 + 6n - 2)(n + 4)$

$$\begin{array}{c} n^2 + 6n - 2 \\ \hline n & n^3 & 6n^2 & -2n \\ +4 & 4n^2 & 24n & -8 \\ \hline n^3 + 10n^2 + 22n - 8 \end{array}$$

*way #2*

$$(a^2 + 3a - 4)(a + 2) = a^3 + 3a^2 - 4a + 2a^2 + 6a - 8 = a^3 + 5a^2 + 2a - 8$$

*Note*  $a - 8$

$$\begin{array}{c} -a & -a^2 & 8a \\ +2 & 2a & -16 \\ \hline -a^2 + 16a - 16 \end{array}$$