5-2 Polynomials

Remember
$(x^2)^5 = x^{10}$
$x^2 \cdot x^5 = x^7$

Objective: Add, subtract, and Multiply Polynomials.

Polynomial: a monomial or sum of monomials.

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

$4x^3 + 3x^2$ degree 3 (3, 2)

$5x^5y^1 + 4x^3y^6$ degree 9 (6, 9)

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

A. $c^2 - 4\sqrt{c} + 18$ Not a polynomial since "c" is under the radical

B. $-16p^5 + (3/4)p^2q^7$ (5, 9) yes it's a polynomial. Degree: 9

II. Simplify

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

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

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

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

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

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

Note
$a + a = 2a$
$a \cdot a = a^2$

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

Binomial · Binomial

FOIL — First, Outside, Inside, Last

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

$8p^2 + 14p + 3$

$(x+2)(x-3)$

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

way #1

a^2+3a-4

	a^3	$3a^2$	$-4a$
$+2$	$2a^2$	$6a$	-8

a^3+5a^2+2a-8

way #2

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

$a^3+3a^2-4a+2a^2+6a-8$

a^3+5a^2+2a-8

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

n^2+6n-2

	n^3	$6n^2$	$-2n$
$+4$	$4n^2$	$24n$	-8

$n^3+10n^2+22n-8$

Note

$a-8$

	$-a^2$	$8a$
$+2$	$2a$	-16

$-a^2+16a-16$