Key

Unit 7 Day 2 Notes on Multiplying Polynomials

Recall from yesterday: **Simplify** the expression and **classify** the polynomial

A) $(x^3+5x^2-2x+3)+(x^2+2x-5)$

x^3+6x^2-2

* cubic trinomial

B) $(x^3+5x^2-2x+3)-(x^3+2x^2-5)$

$\cancel{x^3}+5x^2-2x+3-\cancel{x^3}-2x^2+5$

$3x^2-2x+8$

* quadratic trinomial

Multiplying polynomials. Let's try!

Together.

Ex 1) $2x(x^2+3x)$ * distribute

$\boxed{2x^3+6x^2}$

Ex 2) $3x^2(x^3+4x^2+8x+5)$

$\boxed{3x^5+12x^4+24x^3+15x^2}$

When multiplying 2 binomials

* **F**irst
Outers
Inners
Last

Ex 3) $(x+5)(2x+7)$

$2x^2+7x+10x+35$

$\boxed{2x^2+17x+35}$

You.

1) $4x(x^2+3x)$

$\boxed{4x^3+12x^2}$

2) $2x^3(4x^2+10x+3)$

$\boxed{8x^5+20x^4+6x^3}$

3) $(x+8)(3x+10)$

$3x^2+10x+24x+80$

$\boxed{3x^2+34x+80}$

Ex 4) $(x-5)(3x^2+8x-9)$

$3x^3+8x^2-9x-15x^2-40x+45$

$\boxed{3x^3-7x^2-49x+45}$

4) $(x+4)(7x^2+4x+9)$

$7x^3+4x^2+9x+28x^2+16x+36$

$\boxed{7x^3+32x^2+25x+36}$

*Ex 5) $(x-3)(x+3)$ ← called conjugates → 5) $(2x+1)(2x-1)$

middle terms eliminate each other

$x^2+\cancel{3x}-\cancel{3x}-9$

$\boxed{x^2-9}$

$4x^2-\cancel{2x}+\cancel{2x}-1$

$\boxed{4x^2-1}$

$(a+b)(a-b)$

a^2-b^2

*Ex 6) $(2x+1)^2 = (2x+1)(2x+1)$

$4x^2+2x+2x+1$

$\boxed{4x^2+4x+1}$

6) $(x-5)^2 = (x-5)(x-5)$

$x^2-5x-5x+25$

$\boxed{x^2-10x+25}$

$(a+b)^2$

$a^2+2ab+b^2$