Chapter 2.1 Adding and Subtracting Polynomials

poly = many

nomials = terms

$+3x^2 + 8x - 2$

$8x$, $3x$ Like

$8x^2$, $3x$ unlike

x^2: $x \cdot x$

ex1: $(3x^2 + 4x - 8) + (5x - 2 - 18x^2)$

$= -15x^2 + 9x - 10$

Descending Order: Largest exponent to smallest

ex2: $(4x^2 - 2 + 5x) - (8 + 2x - 3x^2)$

$= 4x^2 - 2 + 5x - 8 - 2x + 3x^2$

$= 7x^2 + 3x - 10$

ex3: $4(2x^2+3x-2)+3(x-2x^2)$ multiply

$= 8x^2+12x-8+3x-6x^2$

$= 2x^2+15x-8$

ex4: $-6x(2x-4) + 2(x^2-8) - 3(2x^2-6x)$

$= -12x^2 + 24x + 2x^2 - 16 - 6x^2 + 18x$

$= -16x^2 + 42x - 16$

2.2 Multiplying Polynomials

FOIL

- multiplying polynomials uses the distributive property:

$$2(x-3) = 4x-6$$

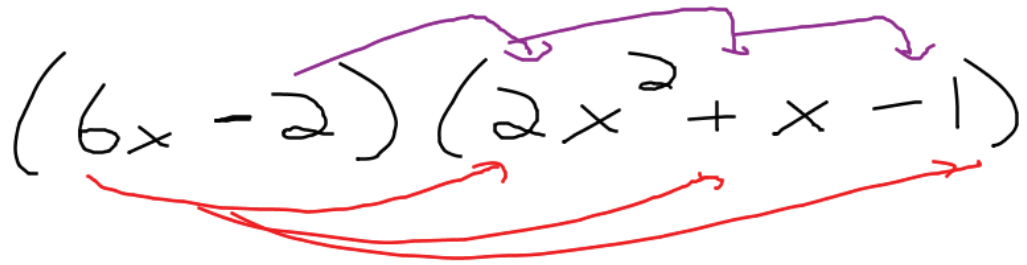
ex: $(x-4)(2x+3) =$

$$= 2x(x-4) + 3(x-4)$$

$$= 2x^2 - 8x + 3x - 12$$

$$= 2x^2 - 5x - 12$$

ex: $(6x-2)(2x^2+x-1)$ $2\times3=6$



$= 12x^3 + 6x^2 - 6x - 4x^2 - 2x + 2$

$= 12x^3 + 2x^2 - 8x + 2$

ex: $(4x-5)(4x+5)$

$= 16x^2 + 20x - 20x - 25$

$= 16x^2 - 25$

Difference of Squares

ex: $(2x-3)(4x^2+9)(2x+3)$

$=(4x^2-9)(4x^2+9)$

$=16x^4-81$

ex: $(2x+5)^2$

~~$4x^2+25$~~

$(2x+5)(2x+5)$

$= 4x^2 + 10x + 10x + 25$

$= 4x^2 + 20x + 25$

$(3x-7)^2$

$= 9x^2 - 42x + 49$