2.2: Adding, Subtracting, and Multiplying Polynomials

Simplify and write in standard form.

Example 1: $4x(2x + 3)$

$8x^2 + 12x$

Example 2: $(x^2 - 5)(x + 4)$

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

FOIL

$x^3 + 4x^2 - 5x - 20$

Example 3: $(2x^2 - 5x + 7) + (x^3 - 2x^2 + 8x)$

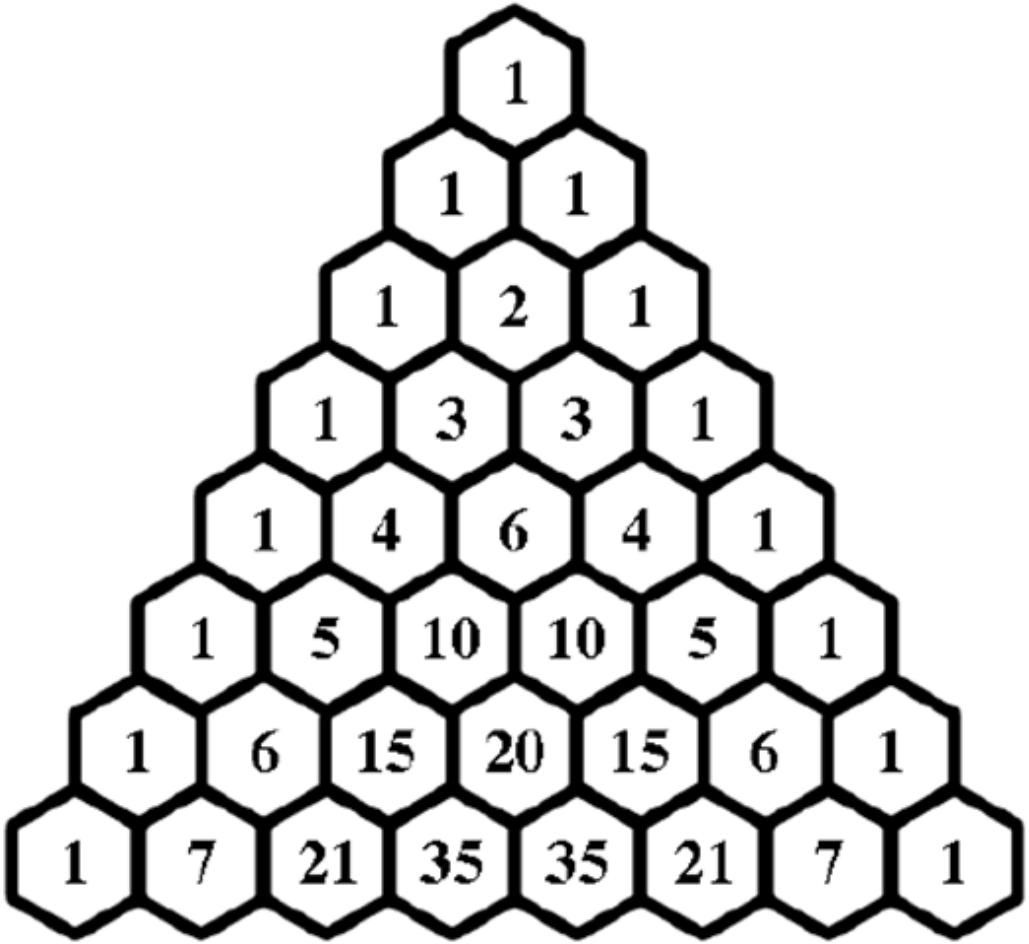
$x^3 + 3x + 7$

Example 4: $3x(2x + 4) - x(4x + 1)$

$6x^2 + 12x - 4x^2 - 1x$

$2x^2 + 11x$

Pascal's Triangle



Example 5: Expand $(x+2)^4$

$x^0 = 1$

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

$1(x)^4(2)^0 = 1x^4$

$4(x)^3(2)^1 = 8x^3$

$6(x)^2(2)^2 = 24x^2$

$4(x)^1(2)^3 = 32x$

$1(x)^0(2)^4 = 16$

$$x^4 + 8x^3 + 24x^2 + 32x + 16$$

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

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

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

Example 6: Expand $(3x-2)^3$

△

$1\ (3x)^3(-2)^0 = 27x^3$

$3\ (3x)^2(-2)^1 = -54x^2$

$3\ (3x)^1(-2)^2 = 36x$

$1\ (3x)^0(-2)^3 = -8$

$$27x^3 - 54x^2 + 36x - 8$$

Example 7: Expand $(2x - 1)^5$