2.5 notes

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Foundations and Precalculus 10

2.5 – Expanding Polynomials

Review: We know several methods for expanding/multiplying polynomials…

1) FOIL
2) Area Model
3) Distributive Property for each term in first bracket (feed the chickens with multiple farmers) → can always switch order of the brackets.

This is a two-step process:

Step #1: EXPAND – multiplication ①

Step #2: SIMPLIFY – add/subtract like terms ②

Recall: $(x+3)(2x-1)$

$= x(2x-1)+3(2x-1)$ ① multiply

$= 2x^2 - x + 6x - 3$ ② add/subtract

$= \boxed{2x^2+5x-3}$

Ex#1: Expand: $(2x+5)(x^2+3x-4)$

$= 2x(x^2+3x-4)+5(x^2+3x-4)$

$= 2x^3+6x^2-8x+5x^2+15x-20$

$= \boxed{2x^3+11x^2+7x-20}$

You try: Expand $(4x^2-2x-3)(-x^2+6x+2)$

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

$= -4x^4+24x^3+8x^2+2x^3-12x^2-4x+3x^2-18x-6$

$= \boxed{-4x^4+26x^3-x^2-22x-6}$

Breakdown problem into parts, then ① - ②

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Ex#2: Expand and simplify $(3x + y - 1)(2x - 4) - (3x + 2y)^2$

① $3x(2x-4) + y(2x-4) - 1(2x-4)$

$= 6x^2 - 12x + 2xy - 4y - 2x + 4$

① $= 6x^2 - 14x + 2xy - 4y + 4$

① - ②

$1(6x^2 - 14x + 2xy - 4y + 4) - 1(9x^2 + 12xy + 4y^2)$

$= 6x^2 - 14x + 2xy - 4y + 4 - 9x^2 - 12xy - 4y^2$

$= -3x^2 - 14x - 10xy - 4y - 4y^2 + 4$

* $(x)(y) = (y)(x) = xy$ write in alphabetical order.

② $(3x+2y)^2$ FOIL

$= (3x+2y)(3x+2y)$

$= 9x^2 + 6xy + 6xy + 4y^2$

② $= 9x^2 + 12xy + 4y^2$

HW p186 #5adf, 10ac, 15ef, 16, 17a