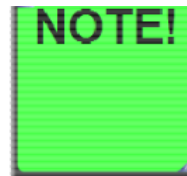


Expand and simplify each of the following.

$$\begin{array}{lll} \text{a) } (3x + 2)(x - 2) & \text{b) } (4 + 3x)(-3 + 2x) & \text{c) } -2(3x - 3)(2x + 4) \\ = 3x^2 - 6x + 2x - 4 & = -12 - x + 6x^2 & = -2(6x^2 + 6x - 12) \\ = 3x^2 - 4x - 4 & = 6x^2 - x - 12 & = -12x^2 - 12x + 24 \end{array}$$

Special Binomials

Use any representation to investigate the following. Can you find any patterns?



$$\begin{aligned} (x - 2)^2 &= x^2 - 4x + 4 \\ (x + 3)^2 &= x^2 + 6x + 9 \\ (3x + 1)^2 &= 9x^2 + 6x + 1 \\ (2x - 5)^2 &= 4x^2 - 20x + 25 \\ (4x + y)^2 &= 16x^2 + 8xy + y^2 \end{aligned}$$

Each is a...

Perfect Square Trinomial

$$(a + b)^2 = a^2 + 2ab + b^2$$

$$(a - b)^2 = a^2 - 2ab + b^2$$



Diff signs!
 $(x - 3)(x + 3)$
 $= x^2 - \cancel{3x} + \cancel{3x} - 9$
 $= x^2 - 9$

$$(x + 4)(x - 4)$$

$$= x^2 - 16$$

Do it again!



$$(2y + 5)(2y - 5)$$

$$= 4y^2 - 25$$

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

$$= 9x^2 - 4b^2$$

Each is a...

Difference of Squares!

$$(a + b)(a - b) = a^2 - b^2$$



$$\begin{aligned} \text{a) } & (x-3)(x+3) + (2x-5)^2 \\ & = x^2 - 9 + 4x^2 - 20x + 25 \\ & = 5x^2 - 20x + 16 \end{aligned}$$

$$\begin{aligned} \text{b) } & (3x+7)^2 - (2x-1)(2x+1) \\ & = 9x^2 + 42x + 49 - (4x^2 - 1) \\ & = 9x^2 + 42x + 49 - 4x^2 + 1 \\ & = 5x^2 + 42x + 50 \end{aligned}$$