3-3 Reteach to Build Understanding

Polynomial Identities

Special polynomial identities can be used to multiply polynomials.

$(ax + b)(ax + b)$ or $(ax - b)(ax - b)$ can be multiplied using the formula $ax^2 \pm 2abx + b^2$ where the sign of the second term is determined by whether you are adding or subtracting the polynomial.

Example:

$(3x \pm 2)(3x \pm 2) = a^2 \pm 2ab + b^2$

Where $a = 3x$ $\quad 2ab = 2(3x)(2)$ $\quad b = 2$ $\quad a^2 = 9x^2$ $\quad 2ab = 12x$ $\quad b^2 = 4$

if $(3x + 2)(3x + 2) = 9x^2 + 12x + 4$ $\quad$ if $(3x - 2)(3x - 2) = 9x^2 - 12x + 4$

1. Solve the following problems:

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

i. Identify the values: $a =$ $\qquad b =$

ii. Substitute into: $a^2 = (2x)^2$ $\quad 2ab = 2(2x)(2)$ $\quad b^2 = (2)^2$

iii. Solve: $(2x + 2)(2x + 2) = \quad x^2 + \quad x + 4$

b. $(x - 3)(x - 3) = a^2 + 2ab + b^2$

i. Identify the values: $a =$ $\qquad b =$

ii. Substitute into: $a^2 = (\quad)^2$ $\quad 2ab =$ $\qquad b^2 = (\quad)^2$

iii. Solve: $(x - 3)(x - 3) = \quad x^2 - \quad x +$

2. Martin solved this problem for his math class. Find and fix his mistake.

$(3x - 4)(3x - 4) = 9x^2 + 24x + 16$

3. Solve.

a. $(2x + y) =$

i. $a = 2x$ $\qquad = 2(1x)(1y)$ $\quad b = 1y$

ii. $a^2 = (\quad)^2$ $\quad 2ab =$ $\qquad b^2 = (\quad)^2$

iii. $(2x + y) =$

b. $(5x - 2)(5x - 2) =$

i. $a =$ $\qquad 2ab =$ $\qquad b = -2$

ii. $a^2 = (\quad)^2$ $\quad 2ab =$ $\qquad b^2 = (\quad)^2$

iii. $(5x - 2)(5x - 2) =$ $\qquad 4$