

Name:

Review Lesson: Unit 1- Algebra of Quadratics

1. Expand:

$$\begin{aligned} & -2(x-5)(3x-2) \\ & = -2[3x^2 - 2x - 15x + 10] \\ & = -2[3x^2 - 17x + 10] \\ & = -6x^2 + 34x - 20 \end{aligned}$$

$$\begin{aligned} & 4n(n-3) + (5n+1)(3n+2) \\ & = 4n^2 - 12n + 15n^2 + 10n + 3n + 2 \\ & = 19n^2 + n + 2 \end{aligned}$$

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

$$\begin{aligned} & (4x-5)^2 \\ & = (4x-5)(4x-5) \\ & = 16x^2 - 20x - 20x + 25 \\ & = 16x^2 - 40x + 25 \end{aligned}$$

2. Factor:

$$\begin{aligned} & \frac{4x^2}{4} + \frac{8x}{4} - \frac{20}{4} \\ & = 4(x^2 + 2x - 5) \end{aligned}$$

$$\begin{aligned} & \frac{15x^3y}{5xy} + \frac{40x^2y}{5xy} - \frac{35xy}{5xy} \\ & = 5xy(3x^2 + 8x - 7) \end{aligned}$$

$$\begin{aligned} & -1 \times 21 \\ & -3 \times 7 \end{aligned}$$

$$\begin{aligned} M &= -21 \\ A &= 8 \end{aligned}$$

$$\begin{aligned} & \underline{7x(2x-5)} + \underline{4(2x-5)} \\ & = (2x-5)(7x+4) \end{aligned}$$

$$\begin{aligned} & \frac{12n^3 - 16n^2}{4n^2} + \frac{15n - 20}{5} \\ & = 4n^2(3n-4) + 5(3n-4) \\ & = (3n-4)(4n^2+5) \end{aligned}$$

$$\frac{2x^2}{2} - \frac{20x}{2} + \frac{48}{2}$$

$$= 2(x^2 - 10x + 24)$$

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

$$x^2 + 5x - 36$$

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

$$2x^2 - 7x - 30$$

$$M = -60$$

$$A = -7$$

$$= \frac{2x^2 + 5x - 12x - 30}{x \quad -6}$$

$$= (x-6)(2x+5)$$

$$10x^2 + x - 24$$

$$M = -240$$

$$A = 1$$

$$= \frac{10x^2 - 15x + 16x - 24}{5x \quad 4}$$

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

$$\begin{array}{l} -1 \times 240 \\ -2 \times 120 \\ -3 \times 80 \\ -4 \times 60 \\ -5 \times 48 \\ -6 \times 40 \\ -8 \times 30 \\ -10 \times 24 \\ -12 \times 20 \\ -15 \times 16 \end{array}$$

$$16x^2 - 49$$

$$(4x)^2 - (7)^2$$

$$(4x+7)(4x-7)$$

$$\frac{5x^2}{5} - \frac{45}{5}$$

$$= 5(x^2 - 9)$$

$$= 5(x+3)(x-3)$$

*3. Complete the Squares and state the vertex for the quadratic:

$$* 4x^2 - 20x + 25$$

$$f(x) = 3x^2 - 24x - 10$$

STEP 1

$$3(x^2 - 8x) - 10$$

STEP 2

$$3(x^2 - 8x + 4^2 - 4^2) - 10$$

$$\frac{8}{2} = 4$$

$$+ 4^2$$

STEP 3

$$3((x-4)^2 - 16) - 10$$

STEP 4

$$3(x-4)^2 - 48 - 10 = 3(x-4)^2 - 58$$

$$\therefore \text{Vertex (h,k)} = (4, -58)$$

$$f(x) = a(x-h)^2 + k$$