

Factoring Practice Review

Factoring: GCF

$$10g - 15h = 5(2g - 3h)$$

$$12x^2y^2 - 8xy^2$$

$$4xy^2(3x - 2)$$

Difference of Squares

$$4x^2 - 9 =$$

perfect square — perfect square

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

$$100r^2 - 49$$

$$(10r - 7)(10r - 7)$$

Simple Trinomials

Perfect Square

perfect square + bx + perfect square

$$x^2 + 6x + 9$$

$$(x + 3)^2$$

$$x^2 - 6x + 9$$

$$(x - 3)^2$$

$$4x^2 - 16x + 16$$

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

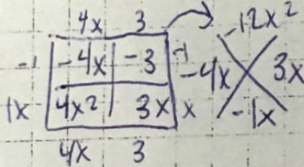
$$(2x - 4)(2x - 4) \quad 4x^2 - 8x - 8x + 16$$

$$4x^2 - 16x + 16$$

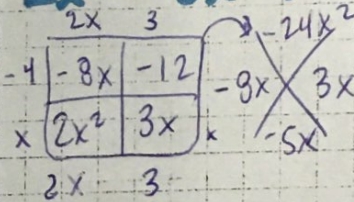
Complex Trinomials

$$4x^2 - x - 3$$

$$(4x + 3)(x - 1)$$



$$2x^2 - 5x - 12$$



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

Zero Product Property

$$4x^2 - x - 3 = 0$$

$$(4x + 3)(x - 1) = 0$$

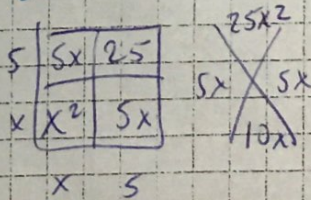
$$4x + 3 = 0 \quad x - 1 = 0 \rightarrow x = -\frac{3}{4} \quad x = 1$$

$$x = -\frac{3}{4} \quad x = 1 \quad \left(-\frac{3}{4}, 0\right) \quad (1, 0)$$

find the roots / x-intercepts

$$x^2 + 10x + 25 = 0$$

$$(x + 5)^2$$



$$(x + 5)(x + 5) = (x + 5)^2$$

Solving Quadratics | Quadratic Formula

$$x^2 + 12x + 27 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a = 1$$

$$b = 12$$

$$c = 27$$

$$x = \frac{-12 \pm \sqrt{12^2 - 4(1)(27)}}{2(1)}$$

$$x = \frac{-12 \pm \sqrt{144 - 108}}{2} = \frac{-12 \pm \sqrt{36}}{2}$$

$$3x^2 + x - 14 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a = 3$$

$$b = 1$$

$$c = -14$$

$$x = \frac{-(1) \pm \sqrt{(1)^2 - 4(3)(-14)}}{2(3)}$$

$$x = \frac{-1 \pm \sqrt{1 + 168}}{6}$$

$$x = \frac{-1 \pm \sqrt{169}}{6} = \frac{-1 \pm 13}{6}$$

$$x = \frac{-1 + 13}{6} = \frac{12}{6} = 2$$

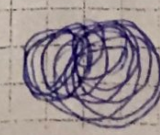
Find the roots / x-intercepts

Factored form:

$$(x + 3)(x + 9) = 0$$

$$\begin{matrix} (-3, 0) \\ (-9, 0) \end{matrix}$$

$$\begin{matrix} \frac{-12 + 6}{2} = -3 \\ \frac{-12 - 6}{2} = -9 \end{matrix}$$



$$\frac{-1 - 13}{6} = \frac{-14}{6} = -\frac{7}{3}$$