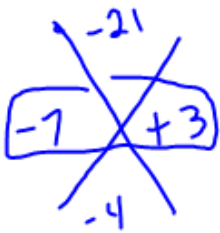


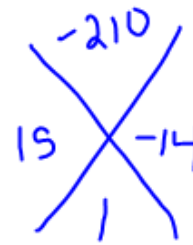
Factor the following quadratic expressions:

$$1. x^2 - 4x - 21 = (x - 7)(x + 3)$$



$$10x^2 + 1x - 21$$

$$= (5x - 7)(2x + 3)$$



$$10x^2 + 15x - 14x - 21$$

$$5x(2x + 3) - 7(2x + 3)$$

Quadratics Practice

Find the x intercepts of the following quadratic equations by factoring:

$$\begin{array}{c} -18 \\ 9 \quad \times \quad -2 \\ 7 \end{array}$$

$$x^2 + 14x + 24 = 0$$

$$(x + 12)(x + 2) = 0$$

$$\begin{array}{cc} \downarrow & \downarrow \\ x + 12 = 0 & x + 2 = 0 \\ x = -12 & x = -2 \end{array}$$

$$6x^2 + 7x - 3 = 0$$

$$6x^2 + 9x - 2x - 3 = 0$$

$$3x(2x + 3) - 1(2x + 3) = 0$$

$$(3x - 1)(2x + 3) = 0$$

$$3x - 1 = 0$$

$$x = \frac{1}{3}$$

$$2x + 3 = 0$$

$$x = -\frac{3}{2}$$

Find the roots of the following quadratic equations by using the square root method:

$$3x^2 - 12 = 36$$

+12 +12

$$\cancel{3}x^2 = \frac{48}{\cancel{3}}$$

$$\sqrt{x^2} = \sqrt{16}$$

$$x = \pm 4$$

$$2(x-4)^2 + 10 = 28$$

-10 -10

$$\frac{2(x-4)^2}{2} = \frac{18}{2}$$

$$\sqrt{(x-4)^2} = \sqrt{9}$$

$$\cancel{x-4} = \pm 3$$

+4 +4

$$x = 4 \pm 3$$

$$x = 7$$

$$x = 1$$

Solve the following quadratic equations by completing the square:

$$x^2 + 6x + 1 = 0$$

-1 -1

$$\frac{6}{2} = \boxed{3}^*$$

$$3^2 = 9$$

$$x^2 + 6x + \underline{9} = -1 + \underline{9}$$

$$\sqrt{(x+3)^2} = \sqrt{8}$$

$$x+3 = \pm 2\sqrt{2}$$

-3 -3

$$x = -3 \pm 2\sqrt{2}$$

$$2x^2 + 8x - 16 = 0$$

+16 +16

$$\frac{4}{2} = \boxed{2}^*$$

$$(2)^2 = 4$$

$$2x^2 + 8x = 16$$

$$2(x^2 + 4x + \underline{4}) = 16 + \underline{8}$$

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

- - - - -

$\frac{2}{2}$ $\frac{2}{2}$

$$(x+2)^2 = 12$$

$$x+2 = \pm 2\sqrt{3}$$

$$x = -2 \pm 2\sqrt{3}$$

Solve the following equations by using the quadratic formula:



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

$$3x^2 + 10x - 12 = 0$$

$$a = 3$$

$$b = 10$$

$$c = -12$$

$$\frac{-10 \pm \sqrt{(10)^2 - 4(3)(-12)}}{2(3)}$$

$$\frac{-10 \pm \sqrt{244}}{6} = \frac{-10 \pm 2\sqrt{61}}{6}$$

$$\square \quad x = \left[\frac{-10 + 2\sqrt{61}}{6} \right]$$

$$x = \frac{-10 - 2\sqrt{61}}{6}$$

$$\frac{\sqrt{61} - 5}{3} \quad \text{or} \quad x = \frac{-5 + \sqrt{61}}{3}$$

$$x = \frac{-5 - \sqrt{61}}{3}$$

$$\frac{-\sqrt{61} - 5}{3}$$

$$\frac{-10 \pm 2\sqrt{61}}{6} = \frac{-5 \pm \sqrt{61}}{3}$$

$$\frac{-10}{6} \pm \frac{2\sqrt{61}}{6}$$

$$\frac{-5}{3} \pm \frac{\sqrt{61}}{3}$$

Practice with Quadratics

Quiz # 8