

November 17, 2015

$$\frac{ax^2 + bx + c}{a} = \frac{0}{a}$$

$$x^2 + \frac{b}{a}x + \frac{c}{a} = 0$$

(a) $\frac{b}{a} \cdot \frac{1}{2} = \frac{b}{2a}$
 (b) $(\frac{b}{2a})^2 = \frac{b^2}{4a^2}$

$$a(x + \frac{b}{2a})^2 + \dots$$

$h = -\frac{b}{2a} \rightarrow$ x-Coordinate of the Vertex.

Nov 17-9:57 AM

$$x^2 - 5x - 2 = 0$$

$a=1$
 $b=-5$

$$h = -\frac{b}{2a} = x \text{ of Vertex}$$

$$= -\frac{(-5)}{2(1)}$$

$$= \frac{5}{2} \rightarrow \text{Vertex: } (\frac{5}{2}, -\frac{33}{4})$$

$$(\frac{5}{2})^2 - 5(\frac{5}{2}) - 2 = y$$

$$\frac{25}{4} - \frac{25}{2} - \frac{2}{1} = y$$

$$\frac{25 - 50 - 8}{4} = y$$

$$-\frac{33}{4} = y$$

Nov 17-10:11 AM

$h = 5/2$
 $k = -33/4$
 Vertex: $(5/2, -33/4)$
 A.S.: $x = 5/2$
 opens: up
 Shape: parent
 y-int.: $(0, -2)$
 x-int.: $x = \frac{5}{2} \pm \sqrt{\frac{33}{2}}$
 * Solutions: 2 Real Solution

Nov 17-10:16 AM

$$x^2 - 5x - 2 = 0$$

* Solve for x to find the x-intercepts.

$$x^2 - 5x = 2$$

(a) $-5 \cdot \frac{1}{2} = -5/2$
 (b) $(-5/2)^2 = 25/4$

$$x^2 - 5x + \frac{25}{4} = \frac{2}{1} + \frac{25}{4}$$

$$\sqrt{(x - \frac{5}{2})^2} = \frac{8 + 25}{4}$$

$$= \pm \sqrt{\frac{33}{4}}$$

$$x - \frac{5}{2} = \pm \sqrt{\frac{33}{4}}$$

$$x = \frac{5}{2} \pm \sqrt{\frac{33}{4}}$$

Nov 17-10:24 AM

Quadratic Formula

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

$$x^2 - 5x - 2 = 0$$

$a=1$
 $b=-5$
 $c=-2$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(1)(-2)}}{2(1)}$$

$$= \frac{5 \pm \sqrt{25 + 8}}{2}$$

$$= \frac{5 \pm \sqrt{33}}{2}$$

$33 > 0$ True

Discriminate as to the
 (1) type
 (2) number of solutions

Nov 17-10:35 AM

Discriminate

$$b^2 - 4ac$$

(1) If $b^2 - 4ac > 0$, then 2 Real solutions
 (2) If $b^2 - 4ac = 0$, then 1 Real solution
 (3) If $b^2 - 4ac < 0$, then 2 Complex

Nov 17-10:40 AM