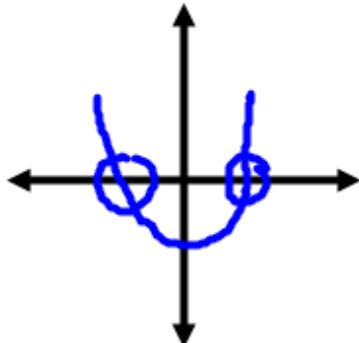
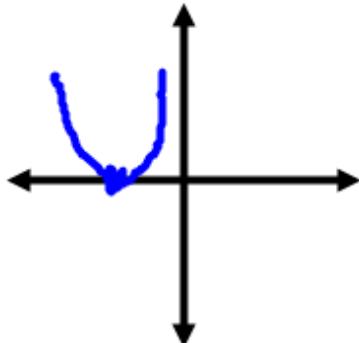
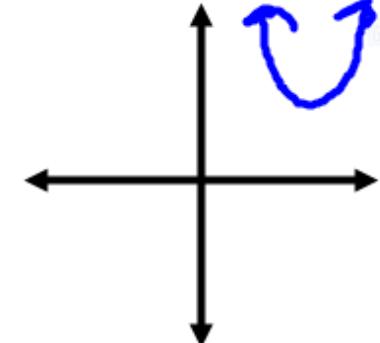


Lesson 4.8: Quadratic Formula

$$ax^2 + bx + c = 0$$

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

Discriminant: $b^2 - 4ac$

Discriminant	Positive	0	Negative
Number/Type of Solution	2 Real	1 Real	2 imaginary
Graph	 A graph of a parabola opening upwards on a Cartesian coordinate system. The vertex is located below the x-axis, and the parabola intersects the x-axis at two distinct points, which are the x-intercepts.	 A graph of a parabola opening upwards on a Cartesian coordinate system. The vertex is located on the x-axis, and the parabola intersects the x-axis at exactly one point, which is the x-intercept.	 A graph of a parabola opening upwards on a Cartesian coordinate system. The vertex is located above the x-axis, and the parabola does not intersect the x-axis at all.

Use the Quadratic formula to Solve

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

$$\begin{matrix} 1 & x^2 - 16x + 7 = 0 \\ a & b & c \end{matrix}$$

$$x = \frac{16 \pm \sqrt{(-16)^2 - 4(1)(7)}}{2(1)}$$

$$= \frac{16 \pm \sqrt{228}}{2} \quad \begin{matrix} 6 & 3 \\ 38 & 2 \\ 19 & 1 \end{matrix}$$

$$= \frac{16 \pm 2\sqrt{57}}{2}$$

$$= \boxed{8 \pm \sqrt{57}}$$

Use the Quadratic formula to Solve

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

$$5x^2 - 10x + 24 = 0$$

$$\begin{aligned} X &= \frac{10 \pm \sqrt{(-10)^2 - 4(5)(24)}}{2(5)} \\ &= \frac{10 \pm \sqrt{-380}}{10} \quad \begin{matrix} 10 < 5 \\ 38 < 17 \end{matrix} \\ &= \frac{10 \pm 2i\sqrt{95}}{10} \quad = \boxed{\frac{5 \pm i\sqrt{95}}{5}} \end{aligned}$$

Use the Quadratic formula to Solve

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

$$x^2 - 4x + 8 = 5x$$

~~-5x~~ ~~-5x~~

$$\underline{x^2 - 9x + 8 = 0} \rightarrow (x-8)(x-1)$$

x-8=0 x-1=0

$$x = \frac{9 \pm \sqrt{(-9)^2 - 4(1)(8)}}{2(1)}$$

$$= \frac{9 \pm \sqrt{49}}{2} = \frac{9 \pm 7}{2}$$

$$\frac{9+7}{2} = \frac{16}{2} = 8$$

$$\frac{9-7}{2} = \frac{2}{2} = 1$$

$$X = 1, 8$$

Find the discriminant then find the number and types of solutions.

$$-4x^2 + x - 14 = 0$$

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