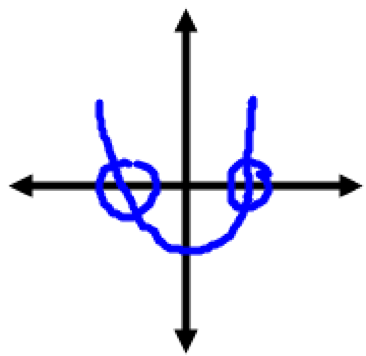
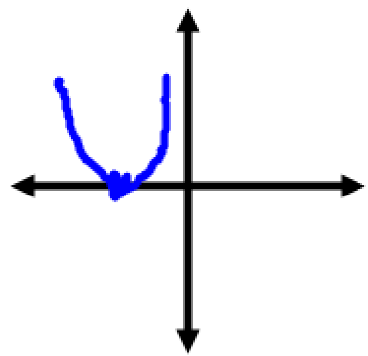
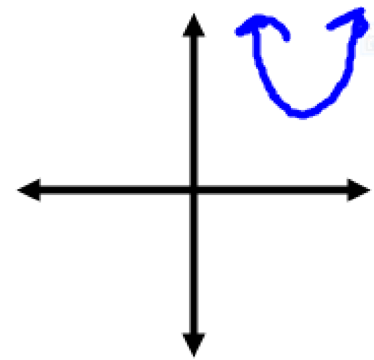
Lesson 4.8: Quadratic Formula

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

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

Discriminant: $b^2 - 4ac$

Discriminant	Positive	0	Negative
Number/Type of Solution	2 Real	1 Real	2 imaginary
Graph	 2 x-intercepts	 1 x-intercept	 No x-intercepts

Use the Quadratic forumala to Solve $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

$$\underset{a}{1}x^2 - \underset{b}{16}x + \underset{c}{7} = 0$$

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

$$= \frac{16 \pm \sqrt{228}}{2}$$

228: 6, 2, 3, 38, 2, 19

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

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

Use the Quadratic forumala to Solve

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

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

a b c

$$X = \frac{10 \pm \sqrt{(-10)^2 - 4(5)(24)}}{2(5)}$$

$$= \frac{10 \pm \sqrt{-380}}{10}$$

10 < 2, 5

38 < 19, 2

$$= \frac{10 \pm 2i\sqrt{95}}{10} = \boxed{\frac{5 \pm i\sqrt{95}}{5}}$$

Use the Quadratic forumala to Solve

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

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

$$-5x \qquad -5x$$

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

$$x-8=0 \qquad x-1=0$$

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

$$= \frac{9 \pm \sqrt{49}}{2} \; {<}^{7}_{7} \quad = \frac{9 \pm 7}{2}$$

$$\frac{9+7}{2} = \frac{16}{2} = \boxed{8} \qquad \frac{9-7}{2} = \frac{2}{2} = \boxed{1}$$

$$\boxed{x = 1, 8}$$

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

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

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