Solving Quadratic Equations:

1. Factoring. Works only if quadratic is factorable.
2. Square Roots. Works only if b=0
3. Graphing. Works only if solutions are real #'s
4. Quadratic Formula. **ALWAYS WORKS!**

Find all solutions to each quadratic equation using the Quadratic Formula. Round real solutions to the nearest hundredth when necessary.

1. $4x^2 + 9x = 2$

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

2. $9x^2 - 42x + 49 = 0$

3. $x^2 + 2x + 5 = 0$

1. $4x^2 + 9x = 2$

$4x^2+9x-2=0$ $\quad b^2-4ac=113$

$x = \frac{-9 \pm \sqrt{113}}{8}$ $\quad$ 2 real sol's

$x = -2.45, 0.20$

2. $9x^2 - 42x + 49 = 0$ $\quad$ 1 real sol

$b^2-4ac=0 \rightarrow \frac{-b}{2a} = \frac{42}{18} = 2.33$

3. $x^2 + 2x + 5 = 0$

2 imaginary sol's

$b^2 - 4ac = -16$

$x = \frac{-2 \pm \sqrt{-16}}{2} = \frac{-2 \pm 4i}{2}$

$-1 \pm 2i$

Discriminant: $b^2 - 4ac$

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

How many and what type of solutions are possible?

2 complex sol's	$b^2 - 4ac < 0$	No x-int of graph
1 real sol	$b^2 - 4ac = 0$	One x-int of graph
2 real sol's	$b^2 - 4ac > 0$	Two x-int of graph

Use the discriminant to tell how many and what type of solutions each quadratic equation has.

1. $4x^2 - 12x + 9 = 0$

$b^2 - 4ac = 0$ — 1 Real sol

2. $-2x^2 + 8x + 3 = 0$

$b^2 - 4ac = 88$ — 2 Real sol's

3. $-x^2 + 4x - 10 = 0$

$b^2 - 4ac = 16 - 4(-1)(-10) = -24$

2 complex sol's