

## Algebra II Worksheet #6 Unit 6 selected solutions

Solve each of the following equations using the quadratic formula. Express any rational solutions in simplest form (exact value). Express any irrational solutions rounded to the nearest hundredth. Express any complex solutions using a + bi form (exact value). Show all of your work neatly organized.

1.  $x^2 + 3x - 6 = 0$   
 $ax^2 + bx + c = 0$

$$a = 1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b = 3$$

$$c = -6 \quad x = \frac{-3 \pm \sqrt{9 - (-24)}}{2}$$

$$x = \frac{-3 \pm \sqrt{33}}{2}$$

$$x = \frac{-3 + \sqrt{33}}{2} \quad \text{or} \quad x = \frac{-3 - \sqrt{33}}{2}$$

$$x \approx 1.37 \quad \text{or} \quad x \approx -4.37$$

3.  $x^2 + 2x + 4 = 0$   
 $ax^2 + bx + c = 0$

$$a = 1 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b = 2$$

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

$$x = \frac{-2 \pm \sqrt{-12}}{2} = \frac{-2 \pm 2\sqrt{3}i}{2}$$

$$x = -1 + \sqrt{3}i \quad \text{or} \quad x = -1 - \sqrt{3}i$$

9.  $3x^2 - 10x + 3 = 0$   
 $ax^2 + bx + c = 0$

$$a = 3 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b = -10$$

$$c = 3 \quad x = \frac{10 \pm \sqrt{100 - 36}}{6}$$

$$x = \frac{10 \pm \sqrt{64}}{6}$$

$$x = \frac{10 + 8}{6} \quad \text{or} \quad x = \frac{10 - 8}{6}$$

$$x = 3 \quad \text{or} \quad x = \frac{1}{3}$$

11.  $25x^2 - 30x + 9 = 0$   
 $ax^2 + bx + c = 0$

$$a = 25 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$b = -30$$

$$c = 9 \quad x = \frac{30 \pm \sqrt{900 - 900}}{50}$$

$$x = \frac{30 \pm \sqrt{0}}{50}$$

$$x = \frac{3}{5}$$