

Math 092  
Quiz 8.1  
Quadratic Equations - Quadratic Formula

1) Find all solutions (real and complex) for the following equations.

a)  $3t^2 - 2 = 0$

$$3t^2 = 2$$

$$t^2 = \frac{2}{3}$$

$$t = \pm \sqrt{\frac{2}{3}}$$

$$t = \frac{\sqrt{2}}{\sqrt{3}}$$

$$t = -\frac{\sqrt{2}}{\sqrt{3}}$$

b)  $(x^2 + 1)^2 = -9$

$$x^2 + 1 = \pm \sqrt{-9}$$

$$x^2 + 1 = \pm 3i$$

$$x = -1 \pm 3i$$

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

2) Solve this equation by completing the square.

a)  $x^2 + 10x = 22$

$$b=10 \quad x^2 + 10x + 25 = 22 + 25$$

$$\frac{b}{2} = 5 \quad (x+5)^2 = 47$$

$$\left(\frac{b}{2}\right)^2 = 25 \quad x+5 = \pm \sqrt{47}$$

$$x = -5 \pm \sqrt{47}$$

$$x = -5 + \sqrt{47}$$

$$x = -5 - \sqrt{47}$$