MAT 104 Quiz 28

Wednesday, December 8, 2004

1. Solve using the square root method

$$x^2 = -25$$

$$x^2 = -25 \Longrightarrow x = \pm\sqrt{-25} = \pm 5i$$

2. Solve using the square root method

$$(x+2)^2 = 4$$

$$\begin{aligned} (x+2)^2 = 4 &\implies (x+2) = \pm\sqrt{4} \\ &\implies x + 2 = \pm 2 \\ &\implies x = -2 \pm 2 \\ &\implies x = 0 \text{ or } -4 \end{aligned}$$

3. Solve by completing the square

$$x^2 - 3x = 3$$

$$\begin{aligned} x^2 - 3x = 3 &\implies x^2 - 3x + \frac{9}{4} = 3 + \frac{9}{4} \\ &\implies \left(x - \frac{3}{2}\right)^2 = \frac{21}{4} \\ &\implies x - \frac{3}{2} = \pm\sqrt{\frac{21}{4}} \\ &\implies x = \frac{3 \pm \sqrt{7}}{2} \end{aligned}$$

4. Solve by completing the square

$$2x^2 - 4x + 7 = 0$$

$$2x^2 - 4x + 7 = 0 \implies x^2 - 2x + \frac{7}{2} = 0$$

$$
\begin{aligned}
&\implies x^2 - 2x + 1 + \frac{5}{2} = 0 \\
&\implies (x-1)^2 = -\frac{5}{2} \\
&\implies x - 1 = \pm\sqrt{-\frac{5}{2}} \\
&\implies x - 1 = \pm\frac{i\sqrt{10}}{2} \\
&\implies x = \frac{2 \pm i\sqrt{10}}{2}
\end{aligned}
$$