Solving Equations with the Quadratic Formula

June 6

Quadratic Formula
If $ax^2 + bx + c = 0$, then $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Solve for x:

1 $1x^2 - 8x + 6 = 0$

$a \quad b \quad c$

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

$$X = \frac{8 \pm \sqrt{64 - 4(1)(6)}}{2} = \frac{8 \pm \sqrt{40}}{2} = \frac{8 \pm 2\sqrt{10}}{2} = 4 \pm \sqrt{10}$$

2 $3x^2 + 7x = 5$

$3x^2 + 7x - 5 = 0$

$a \quad b \quad c$

$$x = \frac{-7 \pm \sqrt{49 - 4(3)(-5)}}{6}$$

$$= \frac{-7 \pm \sqrt{109}}{6} \quad \text{or} \quad -\frac{7}{6} \pm \frac{\sqrt{109}}{6}$$

3 $24x^2 - 7x - 6 = 0$ (a, b, c)

$$x = \frac{7 \pm \sqrt{49 - 4(24)(-6)}}{2(24)}$$

$+576$

$$= \frac{7 \pm \sqrt{625}}{48} = \frac{7 \pm 25}{48} = \frac{32}{48}, \frac{-18}{48}$$

$$= \frac{2}{3}, \frac{-3}{8}$$