8. Solve using the quadratic formula:

$a = 1$

$b = 2$

$c = -3$

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

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(-3)}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{4 + 12}}{2}$$

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

$$x = \begin{cases} \frac{-2+4}{2} = \frac{2}{2} = 1 \\ \frac{-2-4}{2} = \frac{-6}{2} = -3 \end{cases}$$

9. Simplify the rational expression:

$$\frac{3(1)^3 - 12(1)}{6(1)^2 - 24(1) + 24} = \frac{-9}{6} = -\frac{3}{2}$$ ✓

$$\frac{3x^3 - 12x}{6x^2 - 24x + 24} = \frac{3x(x^2 - 4)}{6(x^2 - 4x + 4)}$$

$$= \frac{3x(x-2)(x+2)}{6(x-2)(x-2)}$$

$$= \frac{x(x+2)}{2(x-2)}$$ ✓

$$\frac{1(1+2)}{2(1-2)} = \frac{3}{-2}$$ ✓