Samples **Quadratic equations SOLUTIONS**

1. $-3x^2 + 3x + 36 = 0$, so we use $a = -3, b = 3, c = 36$ in the quadratic formula. Hence

$$\begin{aligned} x &= \frac{-3 \pm \sqrt{3^2 - 4 \times (-3) \times 36}}{2 \times (-3)} \\ &= \frac{-3 \pm \sqrt{9 - (-432)}}{-6} \\ &= \frac{-3 \pm \sqrt{441}}{-6} \\ &= \frac{-3 + 21}{-6} \quad or \quad \frac{-3 - 21}{-6} \\ &= \frac{18}{-6} \quad or \quad \frac{-24}{-6} \\ &= -3 \quad or \quad 4 \end{aligned}$$

2. $-5x^2 - 9x - 10 = 0$, so we use $a = -5, b = -9, c = -10$ in the quadratic formula. Hence

$$\begin{aligned} x &= \frac{9 \pm \sqrt{(-9)^2 - 4 \times (-5) \times (-10)}}{2 \times (-5)} \\ &= \frac{9 \pm \sqrt{81 - 200}}{-10} \\ &= \frac{9 \pm \sqrt{-119}}{-10} \end{aligned}$$

Hence there is no solution.

3. Rearranging the original equation gives

$$\begin{aligned} 3x^2 &= 48 \\ x &= \pm\sqrt{16} \\ x &= 4 \quad or \quad -4 \end{aligned}$$