

Day 2 Solving by Quadratic Formula

$$\text{QF: } \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\textcircled{1} 2x^2 + 4x - 8 = 0$$

$$a = 2 \quad b = 4 \quad c = -8$$

$$x = \frac{-4 \pm \sqrt{4^2 - 4(2)(-8)}}{2(2)}$$

$$x = \frac{-4 \pm \sqrt{80}}{4}$$

$$x = \frac{-4 \pm 4\sqrt{5}}{4}$$

$$x = -1 \pm \sqrt{5}$$

Solution:

$$x = -1 + \sqrt{5}$$

$$x = -1 - \sqrt{5}$$

$$\begin{array}{c} 80 \\ \wedge \\ \textcircled{2} 40 \\ \wedge \\ \textcircled{2} 20 \\ \wedge \\ \textcircled{2} 10 \\ \wedge \\ \textcircled{2} 5 \end{array}$$

$$\textcircled{2} x^2 - 7x = 0 \quad a = 1 \quad b = -7 \quad c = 0$$

$$x = \frac{-(-7) \pm \sqrt{(-7)^2 - 4(1)(0)}}{2(1)}$$

$$x = \frac{7 \pm \sqrt{49}}{2}$$

$$x = \frac{7 \pm 7}{2}$$

$$x = \frac{7+7}{2} = \frac{14}{2} = 7 \quad x = \frac{7-7}{2} = \frac{0}{2} = 0$$

Solutions:

$$x = 7$$

$$x = 0$$

$$(3) x^2 = 8x - 5$$

$$a = 1 \quad b = -8 \quad c = 5$$

$$x^2 - 8x + 5 = 0$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(5)}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{44}}{2}$$

44

2 22

2 11

$$x = \frac{8 \pm 2\sqrt{11}}{2}$$

Solutions

$$x = 4 + \sqrt{11}$$

$$x = 4 - \sqrt{11}$$

$$x = 4 \pm \sqrt{11}$$

$$(4) 10x + 3 = 4x^2$$

$$a = 4 \quad b = -10 \quad c = -3$$

$$0 = 4x^2 - 10x - 3$$

$$x = \frac{-(-10) \pm \sqrt{(-10)^2 - 4(4)(-3)}}{2(4)}$$

$$x = \frac{10 \pm \sqrt{148}}{8}$$

148

2 74

2 37

$$x = \frac{10 \pm 2\sqrt{37}}{8}$$

Solutions:

$$x = \frac{5 - \sqrt{37}}{4}$$

$$x = \frac{5 \pm \sqrt{37}}{4}$$

$$x = \frac{5 + \sqrt{37}}{4}$$

$$(5) x^2 - 8x + 2 = 0 \quad a = 1 \quad b = -8 \quad c = 2$$

$$x = \frac{-(-8) \pm \sqrt{(-8)^2 - 4(1)(2)}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{56}}{2}$$

$$x = \frac{8 \pm 2\sqrt{14}}{2}$$

$$x = 4 \pm \sqrt{14}$$

Solutions:

$$x = 4 + \sqrt{14}$$

$$x = 4 - \sqrt{14}$$

$$\begin{array}{l} 56 \\ \wedge \\ 2 \text{ } 28 \end{array}$$

$$\begin{array}{l} 28 \\ \wedge \\ 2 \text{ } 14 \\ \wedge \\ 2 \text{ } 7 \end{array}$$

$$(6) 0 = -3x^2 + 6x + 3 \quad a = -3 \quad b = 6 \quad c = 3$$

$$x = \frac{-6 \pm \sqrt{6^2 - 4(-3)(3)}}{2(-3)}$$

$$x = \frac{6 \pm \sqrt{72}}{-6}$$

$$x = \frac{6 \pm 6\sqrt{2}}{-6}$$

$$x = -1 \pm \sqrt{2}$$

Solutions:

$$x = -1 + \sqrt{2}$$

$$x = -1 - \sqrt{2}$$

$$72$$

$$\begin{array}{l} 72 \\ \wedge \\ 2 \text{ } 36 \end{array} \quad \text{Perfect } \square$$

$$\textcircled{7} 2x^2 + 4x = 5$$

$$a=2 \quad b=4 \quad c=-5$$

$$2x^2 + 4x - 5 = 0$$

$$x = \frac{-(4) \pm \sqrt{(4)^2 - 4(2)(-5)}}{2(2)}$$

$$x = \frac{-4 \pm \sqrt{56}}{4}$$

$$x = \frac{-4 \pm 2\sqrt{14}}{4}$$

$$x = -2 \pm \sqrt{14}$$

Solutions

$$x = -2 + \sqrt{14}$$

$$x = -2 - \sqrt{14}$$

$$\begin{array}{r} 56 \\ \wedge \\ \textcircled{2} 28 \\ \wedge \\ \textcircled{2} 14 \\ \wedge \\ 2 \quad 7 \end{array}$$

$$\textcircled{8} 1 - 4x = x^2$$

$$a=1 \quad b=4 \quad c=-1$$

$$0 = x^2 + 4x - 1$$

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

$$x = \frac{-4 \pm \sqrt{20}}{2}$$

$$\begin{array}{r} \text{factor 20} \\ \square \wedge \\ \textcircled{4} 5 \end{array}$$

$$x = \frac{-4 \pm 2\sqrt{5}}{2}$$

$$x = -2 \pm \sqrt{5}$$

Solutions:

$$x = -2 + \sqrt{5}$$

$$x = -2 - \sqrt{5}$$