

## Quadratic Equations Review

$$\begin{aligned} \text{Ex 1} \quad x^2 + 5x + 6 &= 0 \\ (x + 2)(x + 3) &= 0 \end{aligned}$$

$$\begin{array}{r} +1 \quad +6 \\ -1 \quad -6 \\ +2 \quad +3 \checkmark \\ -2 \quad -3 \end{array}$$

$$\begin{aligned} \text{Either } x + 2 = 0 \quad \text{or } x + 3 = 0 \\ \underline{x = -2} \quad \quad \quad \underline{x = -3} \end{aligned}$$

$$\begin{aligned} \text{Ex 2} \quad x^2 - 7x + 12 &= 0 \\ (x - 3)(x - 4) &= 0 \end{aligned}$$

$$\begin{array}{r} +1 \quad +12 \\ -1 \quad -12 \\ +2 \quad +6 \\ -2 \quad -6 \\ +3 \quad +4 \\ -3 \quad -4 \checkmark \end{array}$$

$$\begin{aligned} \text{Either } x - 3 = 0 \quad \text{or } x - 4 = 0 \\ \underline{x = 3} \quad \quad \quad \underline{x = 4} \end{aligned}$$

$$\begin{aligned} \text{Ex 3} \quad x^2 + x - 20 &= 0 \\ (x - 4)(x + 5) &= 0 \end{aligned}$$

$$\begin{array}{r} +1 \quad -20 \\ -1 \quad +20 \\ +2 \quad -10 \\ -2 \quad +10 \\ +4 \quad -5 \\ -4 \quad +5 \checkmark \end{array}$$

$$\begin{aligned} \text{Either } x - 4 = 0 \quad \text{or } x + 5 = 0 \\ \underline{x = 4} \quad \quad \quad \underline{x = -5} \end{aligned}$$

$$\begin{aligned} \text{Ex 4} \quad x^2 - 3x - 10 &= 0 \\ (x + 2)(x - 5) &= 0 \end{aligned}$$

$$\begin{array}{r} +1 \quad -10 \\ -1 \quad +10 \\ +2 \quad -5 \checkmark \\ -2 \quad +5 \end{array}$$

$$\begin{aligned} \text{Either } x + 2 = 0 \quad \text{or } x - 5 = 0 \\ \underline{x = -2} \quad \quad \quad \underline{x = 5} \end{aligned}$$

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## Exercise Solve

$$\begin{aligned} 1) \quad x^2 + 9x + 14 &= 0 \\ (x+2)(x+7) &= 0 \\ x+2=0 &\text{ or } x+7=0 \\ \underline{x=-2} &\quad \underline{x=-7} \end{aligned}$$

$$\begin{aligned} 3) \quad x^2 - 2x - 24 &= 0 \\ (x+4)(x-6) &= 0 \\ x+4=0 &\quad x-6=0 \\ \underline{x=-4} &\quad \underline{x=6} \end{aligned}$$

$$\begin{aligned} 5) \quad x^2 + 8x + 12 &= 0 \\ (x+2)(x+6) &= 0 \\ x+2=0 &\text{ or } x+6=0 \\ \underline{x=-2} &\quad \underline{x=-6} \end{aligned}$$

$$\begin{aligned} 2) \quad x^2 - 3x + 2 &= 0 \\ (x-2)(x-1) &= 0 \\ x-2=0 &\text{ or } x-1=0 \\ \underline{x=2} &\quad \underline{x=1} \end{aligned}$$

$$\begin{aligned} 4) \quad x^2 + 5x - 6 &= 0 \\ (x-1)(x+6) &= 0 \\ x-1=0 &\text{ or } x+6=0 \\ \underline{x=1} &\quad \underline{x=-6} \end{aligned}$$

$$\begin{aligned} 6) \quad x^2 - 2x + 1 &= 0 \\ (x-1)(x-1) &= 0 \\ x-1=0 &\text{ or } x-1=0 \\ \underline{x=1} &\quad \underline{x=1} \end{aligned}$$

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$$\begin{aligned} \text{Ex 5} \quad x^2 - 7x &= 0 \\ x(x-7) &= 0 \\ x=0 &\text{ or } x-7=0 \\ &\quad \underline{x=7} \end{aligned}$$

$$\begin{aligned} \text{Ex 6} \quad 3x^2 + 5x &= 0 \\ x(3x+5) &= 0 \\ x=0 &\text{ or } 3x+5=0 \\ &\quad 3x=-5 \\ &\quad \underline{x=-\frac{5}{3}} \end{aligned}$$

## Exercise

$$\begin{aligned} 1) \quad x^2 + 4x &= 0 \\ x(x+4) &= 0 \\ \underline{x=0} &\text{ or } x+4=0 \\ &\quad \underline{x=-4} \end{aligned}$$

$$\begin{aligned} 2) \quad 2x^2 - 3x &= 0 \\ x(2x-3) &= 0 \\ \underline{x=0} &\text{ or } 2x-3=0 \\ &\quad 2x=3 \\ &\quad \underline{x=\frac{3}{2}} \end{aligned}$$

# Quadratic Formula

to solve  $ax^2 + bx + c = 0$

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

Ex 1

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

$$a = 2$$

$$b = -3$$

$$c = -7$$

$$x = \frac{+3 \pm \sqrt{(-3)^2 - 4(2)(-7)}}{2(2)}$$

$$x = \frac{+3 \pm \sqrt{9 + 56}}{4}$$

$$x = \frac{+3 + \sqrt{65}}{4} \quad \text{or} \quad x = \frac{+3 - \sqrt{65}}{4}$$

$$\underline{x = 2.77}$$

$$\underline{x = -1.27}$$

Exercise

1)

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

$$a = 3$$

$$b = 10$$

$$c = 4$$

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

$$x = \frac{-10 \pm \sqrt{10^2 - 4(3)(4)}}{2(3)} = \frac{-10 \pm \sqrt{100 - 48}}{6}$$

$$x = \frac{-10 + \sqrt{52}}{6} \quad \text{or} \quad x = \frac{-10 - \sqrt{52}}{6}$$

$$\underline{x = -0.465}$$

$$\underline{x = -2.87}$$