

ECUACIONES 2º GRADO

$$\textcircled{c} \quad X^2 - 5X + 6 = 0$$

$$a = 1$$

$$b = -5$$

$$c = +6$$

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

$$X = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 1 \cdot 6}}{2 \cdot 1}$$

$$X = \frac{5 \pm \sqrt{25 - 24}}{2}$$

$$X = \frac{5 \pm \sqrt{1}}{2} \rightarrow X = \frac{5 \pm 1}{2}$$

$$X_1 = \frac{5+1}{2} = \frac{6}{2} = \boxed{3}$$

$$X_2 = \frac{5-1}{2} = \frac{4}{2} = \boxed{2}$$

$$\textcircled{b} \quad X^2 - 9X + 18 = 0$$

$$a = 1$$

$$b = -9$$

$$c = 18$$

$$X = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-9) \pm \sqrt{(-9)^2 - 4 \cdot 1 \cdot 18}}{2 \cdot 1}$$

$$= \frac{9 \pm \sqrt{81 - 72}}{2} =$$

$$= \frac{9 \pm \sqrt{9}}{2} = \frac{9 \pm 3}{2} =$$

$$X_1 = \frac{9+3}{2} = 6 //$$

$$X_2 = \frac{9-3}{2} = 3 //$$

ECUACIONES 2º GRADO

$$\begin{aligned} a &= 1 \\ b &= -6 \\ c &= -27 \end{aligned}$$

$$e. x^2 - 6x - 27 = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-6) \pm \sqrt{(-6)^2 - 4 \cdot 1 \cdot (-27)}}{2 \cdot 1}$$

$$\begin{aligned} &= \frac{6 \pm \sqrt{36 + 108}}{2} = \frac{6 \pm \sqrt{144}}{2} = \\ &= \frac{6 \pm 12}{2} \begin{cases} x_1 = \frac{6+12}{2} = \frac{18}{2} = \boxed{9} \\ x_2 = \frac{6-12}{2} = \frac{-6}{2} = \boxed{-3} \end{cases} \end{aligned}$$

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

$$d) x^2 + 8x + 15 = 0$$

$$\begin{aligned} a &= 1 \\ b &= 8 \\ c &= 15 \end{aligned} \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-8 \pm \sqrt{8^2 - 4 \cdot 1 \cdot 15}}{2 \cdot 1}$$

$$x = \frac{-8 \pm \sqrt{64 - 60}}{2}$$

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

$$x = \frac{-8 \pm 2}{2}$$

$$x = \frac{-8+2}{2}$$

$$x = \frac{-6}{2} \rightarrow x = -3$$

$$x = \frac{-10}{2} \rightarrow x = -5$$

$$f) X^2 - 6X + 9 = 0$$

$$a = 1$$

$$b = -6$$

$$c = +9$$

$$X = \frac{-b \pm \sqrt{b^2 - 4 \cdot a \cdot c}}{2 \cdot a} \rightarrow$$

$$X = \frac{-(-6) \pm \sqrt{(-6)^2 - 4 \cdot 1 \cdot 9}}{2 \cdot 1} \rightarrow$$

$$X = \frac{+6 \pm \sqrt{36 - 36}}{2} \rightarrow$$

$$X = \frac{+6 \pm \sqrt{0}}{2} \rightarrow$$

$$\begin{cases} X = \frac{+6 + 0}{2} = \frac{+6}{2} = \boxed{3} \\ X = \frac{+6 - 0}{2} = \frac{+6}{2} = \boxed{3} \end{cases} \quad \begin{matrix} A = 1 \\ B = 6 \\ C = 9 \end{matrix}$$

Sol: 3 (doble)

$$g) X^2 + 6X = -9 \rightarrow X^2 + 6X + 9 = 0$$

$$X = \frac{-B \pm \sqrt{B^2 - 4 \cdot A \cdot C}}{2 \cdot A}$$

$$= \frac{-(-6) \pm \sqrt{(-6)^2 - 4 \cdot 1 \cdot 9}}{2 \cdot 1}$$
$$= \frac{-6 \pm \sqrt{36 - 36}}{2}$$

$$= \frac{-6 \pm \sqrt{0}}{2} = \frac{-6 \pm 0}{2}$$
$$\begin{cases} X_1 = \frac{-6 + 0}{2} = \frac{-6}{2} = -3 \\ X_2 = \frac{-6 - 0}{2} = \frac{-6}{2} = -3 \end{cases}$$

Sol: -3 (doble)

$$\Rightarrow$$

$$h) 4x^2 + 4x = 3 \rightarrow 4x^2 + 4x - 3 = 0$$

$$a = 4$$

$$b = 4$$

$$c = -3$$

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

$$X = \frac{-4 \pm \sqrt{(4)^2 - 4 \cdot 4 \cdot (-3)}}{2 \cdot 4}$$

$$= \frac{-4 \pm \sqrt{16 + 48}}{8}$$

$$= \frac{-4 \pm \sqrt{64}}{8}$$

$$x_1 = \frac{-4 + 8}{8} = \frac{4}{8} = \frac{1}{2} = 0,5$$

$$x_2 = \frac{-4 - 8}{8} = \frac{-12}{8} = \frac{-6}{4} = \frac{-3}{2} = -1,5$$

3

$$I) x^2 - 9x + 14 = 0$$

$$X = \frac{-B \pm \sqrt{B^2 - 4 \cdot A \cdot C}}{2A}$$

$$A = 1$$
$$B = -9$$
$$C = 14$$

$$x = \frac{-(-9) \pm \sqrt{(-9)^2 - 4 \cdot 1 \cdot 14}}{2}$$

$$x = \frac{+9 \pm \sqrt{81 - 56}}{2}$$

$$x = \frac{+9 \pm \sqrt{25}}{2}$$

$$x = \frac{+9 \pm 5}{2} = \begin{cases} x_1 = \frac{+9+5}{2} = \frac{14}{2} = 7 \\ x_2 = \frac{+9-5}{2} = \frac{4}{2} = 2 \end{cases}$$

3

$$a=2$$

$$b=10$$

$$c=-48$$

$$K) 2x^2 + 10x - 48 = 0$$

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

$$x = \frac{-10 \pm \sqrt{(+10)^2 - 4 \cdot 2 \cdot (-48)}}{2 \cdot 2}$$

$$x = \frac{-10 \pm \sqrt{100 + 384}}{4} = \frac{-10 \pm \sqrt{484}}{4} = \frac{-10 \pm 22}{4}$$

$$x_1 = \frac{10 + 22}{4} = \frac{32}{4} = \boxed{8}$$

$$x_2 = \frac{-10 - 22}{4} = \frac{-32}{4} = \boxed{-8}$$

$$A=1$$

$$B=-1$$

$$C=-20$$

$$1) x^2 - x = 20$$

$$x^2 - x - 20 = 0$$

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

$$x = \frac{-1 \pm \sqrt{(-1)^2 - 4 \cdot 1 \cdot (-20)}}{2}$$

$$x = \frac{-1 \pm \sqrt{1 + 80}}{2}$$

$$x = \frac{-1 \pm \sqrt{81}}{2} = \frac{-1 \pm 9}{2}$$

$$\uparrow x_1 = \frac{-1 + 9}{2} = \frac{+8}{2} = 4$$

$$\downarrow x_2 = \frac{-1 - 9}{2} = \frac{-10}{2} = -5$$