

Laberinto Cuadratico

$$1. -7x^2 + 14x + 21 = 0$$

$$b^2 - 4 \cdot (-7) \cdot 21 = 196 + 588 = 784$$

$$x_1 = \frac{-14 - \sqrt{784}}{2 \cdot (-7)} = \frac{-14 - 28}{-14} = \frac{-42}{-14} = 3$$

$$x_2 = \frac{-14 + \sqrt{784}}{2 \cdot (-7)} = \frac{-14 + 28}{-14} = \frac{14}{-14} = -1$$

$$2. 2x^2 - 14x + 24 = 0$$

$$(-14)^2 - 4 \cdot 2 \cdot 24 = 196 - 8 \cdot 24 = 10$$

$$196 - 192 = 4$$

$$x_1 = \frac{14 - \sqrt{4}}{4} = \frac{14 - 2}{4} = \frac{12}{4} = 3$$

$$x_2 = \frac{14 + \sqrt{4}}{4} = \frac{14 + 2}{4} = \frac{16}{4} = 4$$

$$3. -7x^2 + 63 = 0$$

$$7x^2 + 63 - 63 = 0 - 63$$

$$7x^2 = -63$$

$$x = \sqrt{-9}$$

$$x = -\sqrt{-9}$$

$$\frac{7x^2}{7} = \frac{-63}{7}$$

$$x = 3$$

$$x = -3$$

$$x^2 = -9$$

$$4 \quad x^2 - 7x - 4 = 0$$

$$(-7)^2 - 4 \cdot 1 \cdot (-4) = 49 \cdot 4 \cdot (-4)$$

$$49 - (-16) = 65$$

$$x_1 = \frac{7 - \sqrt{65}}{2} = \frac{7 - 8,0622577}{2} = \frac{-1,0622577}{2} = -0,53112887$$

$$x_2 = \frac{7 + \sqrt{65}}{2} = \frac{7 + 8,0622577}{2} = \frac{15,0622577}{2} = 7,53112887$$

$$5 \quad x^2 - 2x - 2 = 0$$

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

$$\sqrt{(-2)^2 - 4 \cdot 1 \cdot (-2)} = 2\sqrt{3}$$

$$\sqrt{(-2)^2 - 4 \cdot 1 \cdot (-2)}$$

$$\sqrt{(-2)^2 + 4 \cdot 1 \cdot 2}$$

$$\sqrt{2^2 + 4 \cdot 1 \cdot 2}$$

$$\sqrt{2^2 + 8} = \sqrt{4 + 8} = \sqrt{12}$$

$$\sqrt{2^2 \cdot 3} = \sqrt{3} \sqrt{2^2} = 2\sqrt{3}$$

$$x_{1,2} = \frac{-(-2) \pm 2\sqrt{3}}{2 \cdot 1}$$

$$x_1 = \frac{-(-2) + 2\sqrt{3}}{2 \cdot 1} = 1 + \sqrt{3}$$

$$x_2 = \frac{-(-2) - 2\sqrt{3}}{2 \cdot 1} = 1 - \sqrt{3}$$

$$6 \quad 4x^2 - 24 = 0$$

$$4x^2 - 24 + 24 = 0 + 24$$

$$4x^2 = 24$$

$$x^2 = 6$$

$$\frac{4x^2}{4} = \frac{24}{4}$$

$$x_1 = \sqrt{6} \quad x_2 = -\sqrt{6}$$

$$7 \quad 2x^2 - 6x - 2 = 4x - 3$$

$$2x^2 - 6x - 2 + 3 = 4x - 3 + 3 = 2x^2 - 6x + 1 = 4x =$$

$$2x^2 - 6x + 1 - 4x = 4x - 4x = 2x^2 - 10x + 1 = 0$$

$$x_{1,2} = \frac{-(-10) \pm \sqrt{(-10)^2 - 4 \cdot 2 \cdot 1}}{2 \cdot 2}$$

$$\sqrt{(-10)^2 - 4 \cdot 2 \cdot 1} = 2\sqrt{23}$$

$$\sqrt{(-10)^2 - 4 \cdot 2 \cdot 1} = \sqrt{10^2 - 4 \cdot 2 \cdot 1} = \sqrt{10^2 - 8} = \sqrt{100 - 8} = \sqrt{92}$$

$$\sqrt{2^2 \cdot 23} = \sqrt{23} \sqrt{2^2} = 2\sqrt{23}$$

$$x_{1,2} = \frac{-(-10) \pm 2\sqrt{23}}{2 \cdot 2}$$

$$x_1 = \frac{-(-10) + 2\sqrt{23}}{2 \cdot 2} = \frac{5 + \sqrt{23}}{2}$$

$$x_2 = \frac{-(-10) - 2\sqrt{23}}{2 \cdot 2} = \frac{5 - \sqrt{23}}{2}$$

$$8 \quad -14x^2 + 4x + 14 = -6x^2$$

$$-14x^2 + 4x + 14 + 6x^2 = -6x^2 + 6x^2$$

$$-8x^2 + 4x + 14 = 0$$

$$x_{1,2} = \frac{-4 \pm \sqrt{4^2 - 4(-8) \cdot 14}}{2(-8)}$$

$$\sqrt{4^2 - 4(-8) \cdot 14} = 4\sqrt{29}$$

$$\sqrt{4^2 - 4(-8) \cdot 14}$$

$$\sqrt{4^2 + 4 \cdot 8 \cdot 14} = \sqrt{4^2 + 448} = \sqrt{16 + 448} = \sqrt{464}$$

$$\sqrt{2^4 \cdot 29} = \sqrt{2^4} \sqrt{29} = 2^2 \sqrt{29} = 4\sqrt{29}$$

$$x_1 = \frac{-4 + 4\sqrt{29}}{2(-8)} = -\frac{1 + \sqrt{29}}{4}$$

$$x_2 = \frac{-4 - 4\sqrt{29}}{2(-8)} = \frac{1 + \sqrt{29}}{4}$$