

Trigo matemáticas

Solución

3

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

$$a = -7$$

$$b = 14$$

$$c = 21$$

$$x = \frac{-14 \pm \sqrt{14^2 - 4(-7) \times 21}}{2(-7)}$$

$$= \frac{-14 \pm \sqrt{14^2 - 4(-7) \times 21}}{2(-7)} = \frac{-14 \pm \sqrt{196 + 588}}{2(-7)}$$

$$= \frac{-14 \pm \sqrt{784}}{2(-7)}$$

$$= \frac{-14 \pm 28}{2(-7)} = \frac{-14 + 28}{2(-7)} = \frac{14}{-14} = -1$$

$$= \frac{-14 - 28}{2(-7)} = \frac{-42}{-14} = 3$$

$$x = \frac{-14 + 28}{2(-7)} = \frac{14}{-14} = -1$$

$$x = \frac{-14 - 28}{2(-7)} = \frac{-42}{-14} = 3$$

2

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

$$a = 2$$

$$b = -14$$

$$c = 24$$

$$x = \frac{-(-14) \pm \sqrt{(-14)^2 - 4 \times 2 \times 24}}{2 \times 2} = \frac{14 \pm \sqrt{196 - 192}}{4} = \frac{14 \pm 2}{4}$$

$$= \frac{14 \pm 2}{4}$$

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

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

$$x = \frac{-(-14) \pm \sqrt{(-14)^2 - 4 \times 2 \times 24}}{2 \times 2} = 2$$

$$x = \frac{-(-14) + 2}{2 \times 2} = \frac{14 + 2}{2 \times 2} = \frac{16}{2 \times 2} = \frac{16}{4} = 4$$

$$x = \frac{-(-14) - 2}{2 \times 2} = \frac{14 - 2}{2 \times 2} = \frac{12}{4} = 3$$

$$= \sqrt{9} = \sqrt{3^2} = \sqrt{3^2} = 3$$

$$-\sqrt{9} = -3 = -\sqrt{9} = \sqrt{3^2} = -3$$

3

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

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

$$7x^2 = -63$$

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

$$\frac{-7x^2}{-7} = x^2 = \frac{-7x^2}{7} = \frac{-7}{7} = -1 = x^2$$

$$\frac{-63}{7} = 9 = \frac{63}{7} = 9 \quad x^2 = 9$$

MARFIL

$$④ \quad x^2 - 7x - 4 = 0$$

$$a = 1$$

$$b = -7$$

$$c = -4$$

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

$$\sqrt{(-7)^2 + 4 \times 1 \times 4}$$

$$\sqrt{(-7)^2 + 4 \times 1 \times 4} = 16$$

$$\sqrt{7^2 + 16}$$

$$7^2 = 49 \quad \sqrt{49 + 16} = 85$$

$$x = \frac{-(-7) + \sqrt{65}}{2 \times 1} = \frac{7 + \sqrt{65}}{2} = \frac{7 + \sqrt{65}}{2 \times 1} = \frac{7 + \sqrt{65}}{2}$$

$$x = \frac{-(-7) - \sqrt{65}}{2 \times 1} = \frac{7 - \sqrt{65}}{2} = \frac{7 - \sqrt{65}}{2 \times 1} = \frac{7 - \sqrt{65}}{2}$$

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

$$a = 1 \\ b = -2 \\ c = -2$$

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

$$\begin{aligned} & \sqrt{(-2)^2 - 4 \times 1 \times 2} \\ &= \sqrt{2^2 + 4 \times 1 \times 2} = 8 \\ &= \sqrt{2^2 + 8} \end{aligned}$$

$$\begin{aligned} & \sqrt{2^2} = 4 \\ &= \sqrt{4+8} = 12 \end{aligned}$$

$$\begin{aligned} 12 &= 6 \times 2 \\ &= 7 \times 6 \end{aligned}$$

$$6 = 3 \times 2$$

$$\begin{aligned} 2 \times 2 \times 3 \\ 2^2 \times 3 \end{aligned}$$

$$\begin{aligned} &= \sqrt{2^2 \times 3} \\ &= \sqrt{3} \sqrt{2^2} \\ &= \sqrt{2^2} = 2 \\ &= 2\sqrt{3} \end{aligned}$$

$$x = \frac{-(-2) + 2\sqrt{3}}{2 \times 1} = \frac{-(-2) + 2\sqrt{3}}{2 \times 1} = \frac{2 + 2\sqrt{3}}{2 \times 1} = \frac{2 + 2\sqrt{3}}{2} = \frac{2(1 + \sqrt{3})}{2} = 1 + \sqrt{3}$$

$$\text{MOX} = \frac{-(-2) - 2\sqrt{3}}{2 \times 1} = \frac{2 - 2\sqrt{3}}{2 \times 1} = 2 - 2\sqrt{3} = 2 \times 1 - 2\sqrt{3} = \frac{2(1 - \sqrt{3})}{2} = 1 - \sqrt{3}$$

$$\textcircled{c} \quad 4x^2 - 24 = 0$$

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

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

$$4x^2 = 24$$

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

$$x^2 = 6$$

$$x = \sqrt{6} \quad x = -\sqrt{6}$$

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

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

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

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

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

$$x = \frac{-(-10) \pm \sqrt{(-10)^2 - 4 \times 2 \times 1}}{2 \times 2}$$

$$x = \frac{-(-10) \pm \sqrt{100 - 8}}{2 \times 2}$$

$$= \frac{10 \pm \sqrt{100 - 8}}{2 \times 2}$$

$$= \frac{10 \pm \sqrt{92}}{2 \times 2}$$

$$= \frac{10 \pm 2\sqrt{23}}{2 \times 2}$$

$$= \frac{10 \pm 2\sqrt{23}}{4}$$

$$= \frac{2(5 \pm \sqrt{23})}{4}$$

$$= \frac{5 \pm \sqrt{23}}{2}$$

$$= 2^2 \times 23$$

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

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

$$= 2 \sqrt{23}$$

$$x = \frac{-(-10) + 2\sqrt{23}}{2 \times 2} = \frac{10 + 2\sqrt{23}}{2 \times 2} = \frac{10 + 2\sqrt{23}}{4} = 2(5 + \sqrt{23}) = \frac{2(5 + \sqrt{23})}{2} = \frac{5 + \sqrt{23}}{1}$$

$$x = \frac{-(-10) - 2\sqrt{23}}{2 \times 2} = \frac{10 - 2\sqrt{23}}{2 \times 2} = \frac{10 - 2\sqrt{23}}{4} = 2(5 - \sqrt{23}) = \frac{2(5 - \sqrt{23})}{2} = \frac{5 - \sqrt{23}}{1}$$

$$\textcircled{8} -14x^2 + 4x + 14 = 6x^2$$

a = -6
b = 4
c = 14

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

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

$$x = \frac{-4 \pm \sqrt{4^2 - 4(-8) \times 14}}{2(-8)}$$

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

$$\sqrt{4^2 + 4 \times 8 \times 14}$$

$$4 \times 8 \times 14 = 448$$

$$\sqrt{4^2 + 448}$$

$$4^2 = 16$$

$$\sqrt{16 + 448} = \sqrt{464}$$

$$464$$

$$= 2 \times 232 = 116 \times 2$$

$$= 2 \times 2 \times 116 = 58 \times 2$$

$$= 2 \times 2 \times 2 \times 58 = 29 \times 2$$

$$= 2 \times 14 \times 2 \times 29 =$$

$$= 2^4 \times 29$$

$$= \sqrt{2^8} \sqrt{2^9}$$

$$= 2^2 \sqrt{2^9}$$

$$= 4 \sqrt{2^9}$$

$$x = \frac{-4 + 4\sqrt{2^9}}{2(-8)} = \frac{-4 + 4\sqrt{2^9}}{2 \times 8 = 16} = \frac{-4 + 4\sqrt{2^9}}{16} = \frac{-4 + 4\sqrt{2^9}}{-16} = \frac{4(1 + \sqrt{2^9})}{16} = \frac{1 + \sqrt{2^9}}{4}$$

$$x = \frac{-4 - 4\sqrt{2^9}}{2(-8)} = \frac{-4 - 4\sqrt{2^9}}{-2 \times 8} = \frac{-4 - 4\sqrt{2^9}}{-16} = \frac{4 + 4\sqrt{2^9}}{16} = \frac{4(1 + \sqrt{2^9})}{16} = \frac{1 + \sqrt{2^9}}{4}$$