

ECUACIONES DE SEGUNDO GRADO

Resolver las siguientes ecuaciones:

a)  $\frac{x^2}{3} - \frac{2x^2}{5} = 0$

b)  $2x^2 - 18 = 0$

c)  $3x^2 - 2 = x^2 - 52$

d)  $4(x^2 + 1) - x = -3x^2 + 2x + 8$

e)  $x^2 + 6x + 8 = 0$

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$$1) \frac{x^2}{3} - \frac{2x^2}{5} = 0$$

$$\frac{5x^2 - 6x^2}{15} = \frac{0}{15} \Rightarrow -x^2 = 0 \Rightarrow x^2 = 0 \Rightarrow x = \pm\sqrt{0} = 0 //$$

$$2) 2x^2 - 18 = 0$$

$$2x^2 = 18$$

$$x^2 = \frac{18}{2} = 9 \Rightarrow x = \pm\sqrt{9} \begin{matrix} \nearrow x = +3 \\ \searrow x = -3 \end{matrix}$$

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

$$3x^2 - x^2 = -5 + 2$$

$$2x^2 = -3 \Rightarrow x^2 = \frac{-3}{2} = -1.5 \Rightarrow x = \pm\sqrt{-1.5} \Rightarrow \text{No Real Solution.}$$

$$4) 4(x^2 + 1) - x = -3x^2 + 2x + 8$$

$$4x^2 + 4 - x = -3x^2 + 2x + 8$$

$$4x^2 + 3x^2 - x - 2x + 4 - 8 = 0$$

$$7x^2 - 3x - 4 = 0$$

$$\begin{aligned} \Rightarrow x &= \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-(-3) \pm \sqrt{(-3)^2 - 4 \cdot 7 \cdot (-4)}}{2 \cdot 7} = \\ &= \frac{3 \pm \sqrt{9 + 112}}{14} = \frac{3 \pm \sqrt{121}}{14} = \frac{3 \pm 11}{14} = \begin{matrix} \rightarrow \frac{3+11}{14} = \frac{14}{14} = 1 // \\ \rightarrow \frac{3-11}{14} = \frac{-8}{14} = \frac{-4}{7} // \end{matrix} \end{aligned}$$

$$5) x^2 + 6x + 8 = 0$$

$$x = \frac{-6 \pm \sqrt{6^2 - 4 \cdot 1 \cdot 8}}{2 \cdot 1} = \frac{-6 \pm \sqrt{36 - 32}}{2} = \frac{-6 \pm \sqrt{4}}{2} = \frac{-6 \pm 2}{2} =$$

$$\rightarrow \frac{-6+2}{2} = \frac{-4}{2} = -2 //$$

$$\rightarrow \frac{-6-2}{2} = \frac{-8}{2} = -4 //$$