

$$m) x^2 = 5x + 6 \rightarrow x^2 - 5x - 6 = 0$$

$$a = 1$$

$$b = -5$$

$$c = -6$$

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

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

$$x = \frac{5 \pm \sqrt{25 + 24}}{2} \rightarrow$$

$$x = \frac{5 \pm \sqrt{49}}{2} \rightarrow$$

$$x = \frac{5 \pm 7}{2} \rightarrow x = \begin{cases} \frac{5+7}{2} = \frac{12}{2} = 6 \\ \frac{5-7}{2} = \frac{-2}{2} = -1 \end{cases}$$

$$n) 2x^2 - 5x + 3 = 0$$

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

$$a = 2$$

$$b = -5$$

$$c = 3$$

$$x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4 \cdot 2 \cdot 3}}{2 \cdot 2}$$

$$x = \frac{5 \pm \sqrt{1}}{4}$$

$$x = \frac{5 \pm 1}{4}$$

$$x_1 = \frac{5+1}{4} = \frac{6}{4} = \frac{3}{2} = 1.5$$

$$x_2 = \frac{5-1}{4} = 1$$

$$N) x^2 + 10x + 25 = 0$$

$$\begin{aligned} A &= 1 \\ B &= 10 \\ C &= 25 \end{aligned} \quad x = \frac{-B \pm \sqrt{B^2 - 4 \cdot A \cdot C}}{2 \cdot A}$$

$$= \frac{-10 \pm \sqrt{100 - 100}}{2} = \frac{-10 \pm 0}{2}$$

$$x_1 = \frac{-10 + 0}{2} = -5$$

$$x_2 = \frac{-10 - 0}{2} = -5$$

$$Q) x^2 + 9 = 10x$$

$$1 \cdot x^2 - 10x + 9 = 0$$

$$a = 1$$

$$b = -10$$

$$c = 9$$

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

$$\frac{100 - 36}{64}$$

$$= \frac{10 \pm \sqrt{100 - 4 \cdot 1 \cdot 9}}{2 \cdot 1}$$

$$= \frac{10 \pm \sqrt{100 - 36}}{2} = \frac{10 \pm \sqrt{64}}{2}$$

$$\frac{10 \pm 8}{2} = \begin{cases} x_1 = \frac{10 + 8}{2} = 9 \\ x_2 = \frac{10 - 8}{2} = 1 \end{cases}$$

Ecuaciones

Incompletas

Incompletas: cuando $b=0$
o $c=0$

$$3x^2 - 5 = 0$$

$$a=3$$

$$b=0$$

$$c=-5$$

TIPO I

Despejamos x^2 :

$$3x^2 = 5$$

$$x^2 = \frac{5}{3}$$

Hacemos la
 $\sqrt{\text{raíz cuadrada}}$

$$\sqrt{x^2} = \pm \sqrt{\frac{5}{3}}$$

$$x = \pm \sqrt{\frac{5}{3}}$$

$$\text{Ejemplo } 4x^2 - 16 = 0$$

(no hay x)
 $b=0$

INCOMPLETA TIPO I

Despejamos x^2 : $4x^2 = 16$

$$x^2 = \frac{16}{4}$$

$$x^2 = 4$$

Hacemos la raíz cuadrada $\sqrt{\text{ }}$:

$$\sqrt{x^2} = \pm \sqrt{4} \Rightarrow x = \pm 2$$

$$g) x^2 + 4 = 0$$

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

$$c=4$$
$$a=1 \quad \sqrt{x^2} = \pm \sqrt{-4}$$

No solución

real

pg. raíz cuadrado

de un n° negativo

$$\textcircled{I} \quad 81 = 9x^2$$

$$81 = x^2$$

$$\frac{81}{9}$$

$$9 = x^2$$

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

$$\pm 3 = x$$

$$\textcircled{x = \pm 3}$$

$$x_1 = 3$$

$$x_2 = -3$$

$$\textcircled{I} \quad 2x^2 - 72 = 0$$

no hay x
 $b=0$

1. despejamos x

$$2x^2 = +72$$

$$x^2 = \frac{72}{2} \Rightarrow x^2 = 36$$

Hacemos $\sqrt{\quad}$...

$$\sqrt{x^2} = \pm \sqrt{36}$$

$$x = \pm 6$$

$$x_1 = 6$$

$$x_2 = -6$$

$$\textcircled{II}$$

$$4x^2 + 12 = 0$$

1. Despejamos x .

$$4x^2 = -12$$

$$x^2 = \frac{-12}{4}$$

2. Hacemos la raíz cuadrada.

$$\sqrt{x^2} = \pm \sqrt{-3}$$

$$x = \pm \sqrt{-3}$$

$\Rightarrow$ No hay solución.

$$\textcircled{III}$$

$$5x^2 - 9 = 0$$

$$5x^2 = +9$$

$$x^2 = \frac{9}{5}$$

$$\sqrt{x^2} = \pm \sqrt{\frac{9}{5}}$$

$$x = \pm \sqrt{\frac{9}{5}}$$

$$+\sqrt{\frac{9}{5}}$$

$$-\sqrt{\frac{9}{5}}$$

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a) $x^2 - 16 = 0$

$$x^2 = +16$$

Despejar
 x^2

$$\sqrt{x^2} = \pm \sqrt{16}$$

Hacer la $x = \pm 4$
 $\sqrt{\quad}$

Sol. $\underbrace{4}_{\sim} \quad \underbrace{4}_{\sim} - 4$

b) $2x^2 - 50 = 0$

$$\frac{2x^2 = 50}{2}$$

$$x^2 = \frac{50}{2}$$

$$x^2 = 25$$

Hacer $\sqrt{\quad}$

$$\sqrt{x^2} = \pm \sqrt{25}$$

$$x = \pm 5$$

c) $3x^2 + 27 = 0$

$$3x^2 = -27$$

Despejamos x^2

$$x^2 = \frac{-27}{3}$$

$$x^2 = \boxed{-9}$$

Hacemos raíz cuadrada

$$\sqrt{x^2} = \pm \sqrt{-9}$$

no tienen
Solución real.

d) $9x^2 - 1 = 0$

$$9x^2 = +1$$

$$x^2 = \frac{1}{9}$$

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

$$x = \pm \sqrt{\frac{1}{9}}$$

$$\boxed{x = \pm \frac{1}{3}}$$

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e) $5x^2 + 2 = 0$

$$5x^2 = -2 \Rightarrow x^2 = -\frac{2}{5}$$

Despejamos $\frac{5x^2}{5} = \frac{-2}{5}$
 x^2

Hacemos $\sqrt{x^2} = \sqrt{\frac{-2}{5}}$
 $\sqrt{\quad}$

No tiene solución
real

f) $-x^2 + 25 = 0$

$$-x^2 = -25$$

$$x^2 = 25$$

$$\sqrt{x^2} = \pm \sqrt{25}$$

$$x = \pm 5 \quad \beta$$

g) $3x^2 - 15 = 0$

$$3x^2 = 15$$

despejamos x^2

$$x^2 = \frac{15}{3}$$

$$\boxed{x^2 = 5}$$

Hacemos $\sqrt{\quad}$

$$\sqrt{x^2} = \pm \sqrt{5}$$

$$\boxed{x = \pm \sqrt{5}} \quad \beta$$

h) $-27x^2 + 27 = 0$

$$-27x^2 = -27$$

$$x^2 = \frac{-27}{-27}$$

$$x^2 = 1$$

$$\sqrt{x^2} = \sqrt{1}$$

$$x = \pm 1$$

β

Ecuaciones 2º

GRADO INCOMPLETAS.

(Falta el n^o , es decir, $c=0$) TIPO II

$$\boxed{ax^2 + bx = 0}$$

Ejemplo

$$x^2 + 5x = 0$$

1º Sacar factor común x :

$$x \cdot (x + 5) = 0$$

2º IGUALAMOS A CERO LOS DOS FACTORES

$$x = 0$$

$$x + 5 = 0 \Rightarrow x = -5$$

Ej.

$$7x^2 - 8x = 0$$

1º

Sacar factor común

$$x \cdot (7x - 8) = 0$$

IGUALAMOS A CERO

$$x = 0$$

$$7x - 8 = 0$$

$$7x = 8 \Rightarrow x = \frac{8}{7}$$

5

$$\textcircled{b} 4x^2 - x = 0$$

1º Sacar factor común:

$$x \cdot (4x - 1) = 0$$

2º Igualo a cero cada uno de los factores

$x = 0$

$4x - 1 = 0 \Rightarrow 4x = 1 \Rightarrow x = \frac{1}{4}$

$$\textcircled{c} 2x^2 + 3x = -5x$$

$$2x^2 + 3x + 5x = 0$$

$$2x^2 + 8x = 0$$

1º Sacar factor común

$$x \cdot (2x + 8) = 0$$

2º IGUALAR A CERO, $x = 0$

$$2x + 8 = 0$$

$$2x = -8$$

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

h

$$3x^2 = 4x$$

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

$$x \cdot (3x - 4) = 0$$

$$x = 0$$

$$3x - 4 = 0$$

$$3x = 4$$

$$x = \frac{4}{3}$$

i

$$3x^2 + 9x = 0$$

$$x \cdot (3x + 9) = 0$$

$$x = 0$$

$$3x + 9 = 0$$

$$3x = -9$$

$$x = \frac{-9}{3}$$

$$x = -3$$

l

$$5x^2 - 125x = 0$$

$$x \cdot (5x - 125) = 0$$

$$x = 0$$

$$5x - 125 = 0$$

$$\frac{5x}{5} = \frac{125}{5} \rightarrow x = 25$$

Examen

1°

a)

$$\frac{x-2}{3} + \frac{x}{5} = 2x + \underbrace{3 \cdot (x+3)}$$

1°
Paréntesis

$$\frac{x-2}{3} + \frac{x}{5} = \frac{2x}{1} + \frac{3x}{1} + \frac{9}{1}$$

2°
Denominador

$$\frac{5x-10}{15} + \frac{3x}{15} = \frac{30x}{15} + \frac{45x}{15} + \frac{135}{15}$$

$$\underline{5x-10} + \underline{3x} = 30x + 45x + 135$$

$$8x - 10 = 75x + 135$$

caso n° caso x

$$-10 - 135 = 75x - 8x \Rightarrow -145 = 67x \Rightarrow$$

$$\frac{-145}{67} = \frac{67x}{67}$$

$$x = \frac{-145}{67}$$

b)

$$\underline{3 \cdot (x-5)} - \underline{3 \cdot (x-1)} = \underline{4 \cdot (x-5)}$$

1°
Paréntesis

$$3x - 15 - 3x + 3 = 4x - 20$$

$$\begin{array}{l} \text{caso x} \\ 3x - 3x - 4x = +15 - 20 - 3 \\ -4x = -8 \\ \frac{-4x}{-4} = \frac{-8}{-4} \end{array}$$

$$x = 2$$