

# ECUACIONES EXPONENCIALES

01.- Resolver las siguientes ecuaciones exponenciales:

a)  $0,4^{x-1} = 6,25^{6x-5}$

b)  $10^{\frac{3x-1}{2x+1}} = 100$

c)  $6^x - 9 \cdot 6^{-x} + 8 = 0$

02.- Resuelve:

a)  $3^{x+2} + 3^{x+1} + 3^x + 3^{x-1} = 120$

b)  $3^{2(x+1)} - 18 \cdot 3^x + 9 = 0$

c)  $5^{2x+1} - 3 \cdot 5^{2x-1} = 550$

## SOLUCIONES

01 Resolver las siguientes ecuaciones Exponenciales

a)  $0,4^{x-1} = 6,25^{6x-5}$

$$\left(\frac{4}{10}\right)^{x-1} = \left(\frac{625}{100}\right)^{6x-5}$$

$$\left(\frac{2}{5}\right)^{x-1} = \left(\frac{5^2}{2^2}\right)^{6x-5}$$

$$(2/5)^{x-1} = (2/5)^{2(5-6x)}$$

$$x-1 = 10-12x$$

$$x = 11/13$$

b)  $10^{\frac{3x-1}{2x+1}} = 100$

$$10^{\frac{3x-1}{2x+1}} = 10^2$$

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

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

$$x = -3$$

c)  $6^x - 9 \cdot 6^{-x} + 8 = 0$

$$6^x - \frac{9}{6^x} + 8 = 0$$

$$6^{2x} - 9 + 8 \cdot 6^x = 0$$

*cambio:*  $6^x = t$

$$t^2 + 8t - 9 = 0$$

$$t_1 = 1 ; t_2 = -9$$

$$\left\{ \begin{array}{l} 6^x = 1 ; x = 0 \\ 6^x = -9 \text{ sin sentido} \end{array} \right.$$

02 Resolver las siguientes ecuaciones Exponenciales

a)  $3^{x+2} + 3^{x+1} + 3^x + 3^{x-1} = 120$

$$9 \cdot 3^x + 3 \cdot 3^x + 3^x + \frac{3^x}{3} = 120$$

$$27 \cdot 3^x + 9 \cdot 3^x + 3 \cdot 3^x + 3^x = 360$$

$$(27 + 9 + 3 + 1) \cdot 3^x = 360$$

$$3^x = 360/40$$

$$3^x = 9 ; x = 2$$

b)  $3^{2(x+1)} - 18 \cdot 3^x + 9 = 0$

$$9 \cdot 3^{2x} - 18 \cdot 3^x + 9 = 0$$

*cambio:*  $3^x = t$

$$9t^2 - 18t + 9 = 0$$

$$t^2 - 2t + 1 = 0$$

$$t_1 = 1, t_2 = 1$$

$$3^x = 1 ; 3^x = 3^0 ; x = 0$$

c)  $5^{2x+1} - 3 \cdot 5^{2x-1} = 550$

$$5 \cdot 5^{2x} - \frac{3}{5} \cdot 5^{2x} = 550$$

$$25 \cdot 5^{2x} - 3 \cdot 5^{2x} = 2750$$

$$(25-3) \cdot 5^{2x} = 2750$$

$$5^{2x} = 125 ; 5^{2x} = 5^3$$

$$2x = 3 ; x = 3/2$$