

SOLUCIONES

EJERCICIO 1

$$\left(\frac{x}{(x+2)(x-2)} + \frac{2}{x+2}\right) \div \frac{3x-4}{x-2} = \left(\frac{x}{(x+2)(x-2)} + \frac{2(x-2)}{(x+2)(x-2)}\right) \div \frac{3x-4}{x-2} =$$

$$= \left(\frac{x+2x-4}{(x+2)(x-2)}\right) \div \frac{3x-4}{x-2} = \frac{3x-4}{(x+2)(x-2)} \div \frac{3x-4}{x-2} = \frac{(3x-4)(x-2)}{(x+2)(x-2)(3x-4)} = \frac{1}{x+2}$$

EJERCICIO 2

$$\left(2x^2 + \frac{1}{x}\right)^2 = 1 \cdot (2x^2)^4 + 4 \cdot (2x^2)^3 \cdot \frac{1}{x} + 6 \cdot (2x^2)^2 \cdot \left(\frac{1}{x}\right)^2 + 4 \cdot 2x^2 \cdot \left(\frac{1}{x}\right)^3 + 1 \cdot \left(\frac{1}{x}\right)^4 =$$

$$16x^8 + 32x^5 + 24x^2 + 8x^{-1} + x^{-4}$$

EJERCICIO 3

$$\begin{pmatrix} 1 & 1 & 1 & 1 \\ 2 & -1 & -1 & 2 \\ 2 & 1 & -3 & 10 \end{pmatrix} x^2 \rightarrow \begin{pmatrix} 2 & 2 & 2 & 2 \\ 2 & -1 & -1 & 2 \\ 2 & 1 & -3 & 10 \end{pmatrix} \begin{matrix} F2 - F1 \\ F3 - F1 \end{matrix} \begin{pmatrix} 2 & 2 & 2 & 2 \\ 0 & -3 & -3 & 0 \\ 0 & -1 & -5 & 8 \end{pmatrix} \begin{matrix} x(-1) \\ x(-3) \end{matrix}$$

$$\begin{pmatrix} 2 & 2 & 2 & 2 \\ 0 & 3 & 3 & 0 \\ 0 & 3 & 15 & -24 \end{pmatrix} \begin{matrix} F3 - F2 \\ F3 - F2 \end{matrix} \begin{pmatrix} 2 & 2 & 2 & 2 \\ 0 & 3 & 3 & 0 \\ 0 & 0 & 12 & -24 \end{pmatrix} \begin{matrix} 2x + 2y + 2z = 2 \rightarrow 2x + 4 - 4 = 2 \rightarrow x = 1 \\ 3y + 3z = 0 \rightarrow 3y - 6 = 0 \rightarrow y = 2 \\ 12z = -24 \rightarrow z = -2 \end{matrix}$$

EJERCICIO 4

$$\frac{(2x-3)^4(2-2x)^5 - (2x-3)^5(2-2x)^4}{(2x-3)^4(2-2x)^5 + (2x-3)^5(2-2x)^4} = \frac{A^4B^5 - A^5B^4}{A^4B^5 + A^5B^4} = \frac{A^4B^4(B-A)}{A^4B^4(B+A)} =$$

$$\frac{B-A}{B+A} = \frac{2-2x-2x+3}{2-2x+2x-3} = \frac{5-4x}{-1} = 4x - 5$$

EJERCICIO 5

Si xyz es el número, $xyz = 100x + 10y + z$

$$x + y + z = 10$$

$$(x + y)/2 = z$$

$$100y + 10x + z + 180 = 100x + 10y + z$$

$$x + y + z = 10$$

$$x + y - 2z = 0$$

$$x - y = 2$$

EJERCICIO 6

a)

$$\sqrt{x^2 + x - 1} - x = 3; \sqrt{x^2 + x - 1} = x + 3; x^2 + x - 1 = x^2 + 6x + 9; -10 = 5x; x = -2$$

$$\text{Comprobación: } \sqrt{4 - 2 - 1} + 2 = 3 \quad V$$

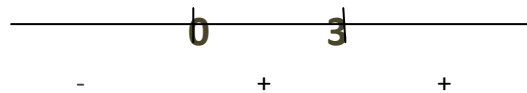
b)

$$\log \frac{x}{2x-3} = \log 100 \rightarrow \frac{x}{2x-3} = 100 ; x = 200x - 300 ; 300 = 199x ; x = 300/199$$

c)

$$2 \cdot 2^x - 2^x \cdot 2^{-1} + 2^x = \frac{5}{2} ; \text{cambio } 2^x = A ; 2A - \frac{A}{2} + A = \frac{3}{2} ; \frac{5A}{2} = \frac{5}{2} ; A = 1 ; 2^x = 1 ; x = 0$$

$$D) \quad \frac{x^2 - 6x + 9}{2x} \geq 0 \quad x^2 - 6x + 9 = 0 \quad x = 3 \quad 2x = 0 \quad x = 0$$



$$x = -1 \quad \frac{1+6+9}{-2} \text{ Negativo} ; x = 1 \quad \frac{1-6+9}{2} \text{ Positivo} ; x = 4 \quad \frac{16-24+9}{8} \text{ Positivo}$$

SOLUCIÓN : (0 , ∞)