Ejercicios de repaso

1) Calcular el dominio y simplificar

a) $\frac{5x^2-5}{x^3-x^2} =$ b) $\frac{x^2+2x+1}{x^3+x^2-x-1}$ c) $\frac{5x-10}{x^3-x^2-8x+12}$

2) Resolver las operaciones, indicando como resultado la mínima expresión y el dominio

a) $\frac{2x+3}{x-1} + \frac{1}{x+1} - \frac{x^2+4x+1}{x^2-1} =$

b) $\frac{1}{x-3} + \frac{2x}{x+1} - \frac{x^2-3x+4}{x^2-2x-3} =$

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

3) Resolver las ecuaciones, escribe el conjunto solución vvz|<:

a) $\frac{x^2-9}{2x-6} + \frac{x^2+x-6}{x+3} = 1$

b) $\frac{x+2}{x^2-3x-10} + \frac{2x+10}{x^2-25} = \frac{x}{x-5}$

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

Resolución punto 2 a

$\frac{2x+3}{x-1} + \frac{1}{x+1} - \frac{x^2+4x+1}{x^2-1}$

$\frac{2x+3}{x-1} + \frac{1}{x+1} - \frac{x^2+4x+1}{(x+1)(x-1)} =$

$\frac{(2x+3)(x+1)}{(x-1)(x+1)} + \frac{1(x-1)}{(x+1)(x-1)} - \frac{x^2+4x+1}{(x+1)(x-1)}$

$\frac{2x^2+2x+3x+3+x-1-x^2-4x-1}{(x-1)(x+1)}$

$\frac{x^2+2x+1}{(x-1)(x+1)} =$

$\frac{(x+1)^2}{(x-1)(x+1)}$ $simplifico$ $\frac{x+1}{x-1}$

Punto 2 b)

$\frac{1}{x-3} + \frac{2x}{x+1} - \frac{x^2-3x+4}{x^2-2x-3}$

$\frac{1}{x-3} + \frac{2x}{x+1} - \frac{x^2-3x+4}{(x+1)(x-3)}$

$\frac{1(x+1)}{(x-3)(x+1)} + \frac{2x(x-3)}{(x+1)(x-3)} - \frac{x^2-3x+4}{(x+1)(x-3)}$

$$\frac{x+1+2x^2-6x-(x^2-3x+4)}{(x-3)(x+1)}$$

$$\frac{x+1+2x^2-6x-x^2+3x-4}{(x-3)(x+1)}$$

$$\frac{x^2-2x-3}{(x-3)(x+1)}$$

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

Punto 2c

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

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

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

$$\frac{x^2-4x-3}{(x+3)x} \cdot \frac{x^2}{x(x^2-4x-3)}$$

$$\frac{1}{x+3}$$

Ejercicio 3ª)

$$\frac{x^2-9}{2x-6} + \frac{x^2+x-6}{x+3} = 1$$

$$\frac{(x+3)(x-3)}{2(x-3)} + \frac{(x+3)(x-2)}{x+3} - 1 = 0$$

$$\frac{x+3}{2} + \frac{x-2}{1} - 1 = 0$$

$$\frac{x+3}{2} + \frac{2(x-2)}{2.1} - \frac{2}{2} = 0$$

$$\frac{x+3+2x-4-2}{2} = 0$$

$$\frac{3x-3}{2} = 0$$

$$3x - 3 = 0$$

$$x = 1$$

Ejercicio 3b)

$$\frac{x+2}{x^2-3x-10}+\frac{2x+10}{x^2-25}=\frac{x}{x-5}$$

$$\frac{x+2}{(x+2)(x-5)}+\frac{2(x+5)}{(x+5)(x-5)}-\frac{x}{x-5}=0$$

$$\frac{1}{x-5}+\frac{2}{x-5}-\frac{x}{x-5}=0$$

$$\frac{3-x}{x-5}=0$$

$$3=x$$

Ejercicio 3c

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

$$\left(\frac{(x+1)(x+4)}{(x+2)(x+4)}-\frac{(x+3)(x+2)}{(x+4)(x+2)}\right).(x^2-4)+1=0$$

$$\left(\frac{x^2+x+4x+4}{(x+2)(x+4)}-\frac{x^2+3x+2x+6}{(x+4)(x+2)}\right).(x^2-4)+1=0$$

$$\frac{(x^2+5x+4-x^2-5x-6)}{(x+2)(x+4)}.(x+2)(x-2)+1=0$$

$$\frac{-2}{(x+2)(x+4)}.(x+2)(x-2)+1=0$$

$$\frac{-2(x-2)}{x+4}+1=0$$

$$\frac{-2x+4}{x+4}+\frac{1.(x+4)}{x+4}=0$$

$$\frac{-2x+4+x+4}{x+4}=0$$

$$\frac{-x+8}{x+4}=0$$

$$-x+8=0.(x+4)$$

X=8

Respuestas

a) $\frac{5(x+1)}{x^2}$ $Dom = \mathbb{R} - \{0; 1\}$

b) $\frac{1}{x-1}$ $Dom = \mathbb{R} - \{-1; 1\}$

c) $\frac{5}{(x+3)(x-2)}$ $Dom = \mathbb{R} - \{-3; 2\}$

Ejercicio 2

a) $\frac{x+1}{x-1}$ $Dom = \mathbb{R} - \{-1; 1\}$

b) Rta=1 $Dom = \mathbb{R} - \{-1; 3\}$

c) $\frac{1}{x+3}$ $Dom = \mathbb{R} - \{-3; 0\}$

Ejercicio 3

a) X= 1 $Dom = \mathbb{R} - \{-1; 1\}$

b) X=3 $Dom = \mathbb{R} - \{-5; -2; 5\}$

c) X=8 $Dom = \mathbb{R} - \{-4; -2\}$