

Ejercicios: Fracciones algebraicas

1.- Opera y simplifica:

a) $\left(\frac{4}{x} - x\right) : \left(\frac{1}{x} + \frac{1}{2}\right)$

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

c) $\frac{x^2}{2} \cdot \left(\frac{2}{x} : \frac{1}{x+2}\right)$

d) $\left[\left(\frac{2}{x} + \frac{1}{x+1}\right) : \left(x - \frac{1}{x+1}\right)\right] \cdot x$

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

2.- Haz las operaciones indicadas y simplifica:

a) $\left(\frac{x+y}{x-y} - \frac{x-y}{x+y}\right) \cdot \left(\frac{x}{y} - \frac{y}{x}\right)$

b) $\left(\frac{1}{x} - \frac{1}{y} + \frac{x+y}{xy}\right) \cdot \frac{2xy}{x+y}$

c) $\left(\frac{x+1}{x-1} - \frac{x}{x+1}\right) \cdot \left(x - \frac{1}{x}\right)$

3.- Simplifica:

a) $\frac{\frac{9+6x+x^2}{9-x^2} \cdot \frac{3x^2-x^3}{3x^2+x^3}}{\frac{2x-4}{3/4+2/8} : \frac{2x^2-8x+8}{x-2}}$

b) $\frac{x^2+6x+5}{x^2-5x+4} \cdot \frac{x-2}{x^2-4} + \frac{x^3-2x}{x^2-4x}$

c) $\frac{\frac{x^2+2x+1}{x^2-1} \cdot \frac{4x^2-4x}{x+1}}{\frac{2x^2+14x+20}{x^3-50+2x^2-25x} : \frac{x-5}{2x^3-20x^2+50x}}$

d) $\frac{\frac{x^2-1}{x^2+2x+1} \cdot \frac{2x^2-8x-10}{x-1}}{\frac{2x+2}{x^2+x-2} : \frac{x+1}{x^3-4x^2-7x+10}}$

e) $\frac{\left(\frac{x^3-6x^2+11x-6}{x^2-9} \cdot \frac{x^2+2x-3}{x^2-3x+2}\right) : \frac{x^2+x-2}{x^2+4x+4}}{\frac{2x^2-2x}{3x^2+3x-6} - \frac{3x^3+12x+12}{2x}}$

f) $\frac{1 + \frac{x-3}{x+3}}{\frac{3-x}{3x}} - \frac{\frac{x+3}{x} - \frac{x+3}{3}}{x-3} - 1$

g) $\left(\frac{x^3+x^2-6x}{x^2+x} - \frac{x^2-9}{x^3+6x^2+9x}\right) : \frac{x^2-5x+6}{x^2+x}$

h) $\frac{1 + \frac{x}{y}}{\frac{x^2-y^2}{xy-y^2}}$

i) $\frac{1 + \frac{a+b}{a-b}}{1 - \frac{a+b}{a-b}}$

j) $\frac{\frac{a^2-1}{a-1} - \frac{a^2+1}{a+1}}{\frac{a^2+1}{a-1} - \frac{a^2-1}{a+1}} : \left(\frac{a^2+1}{a} - \frac{a^2-2a+1}{(a-1)^2}\right)$

k) $\left(\frac{1}{x^2} - \frac{1}{(x-2)^2}\right) : \left(\frac{1}{2x} - \frac{1}{2x-4}\right)$

l) $\frac{\left(\frac{x}{y} - \frac{y}{x}\right)(x-y)}{\frac{1}{y} + \frac{1}{y}}$

m) $\left(\frac{1}{x^2} - \frac{1}{(x-2)^2}\right) : \left(\frac{1}{2x} - \frac{1}{2x-4}\right)$

n) $\frac{x-1}{x} \left[1 - \frac{x}{x-2} \left(\frac{x}{x-1} - \frac{4}{x}\right)\right]$