

Problemas – Tema 1

Solución a problemas de Repaso 4ºESO - Hoja 19 - Problemas 2

Hoja 19. Problema 2

Resuelto por Félix Berrios (octubre 2014)

2. Resuelve.

$$\left(\frac{18x - 9x^2}{9x^2 - 1} \cdot \frac{12x^2 + 2x - 2}{4x^3 - 9x^2 + 2x} \right) \div \left(\frac{4x^2 + 6x + 2}{12x^2 + x - 1} \right)$$

Factorizamos los distintos numeradores y denominadores.

$$18x - 9x^2 = 9(2x - x^2) = -9x(x - 2)$$

$$9x^2 - 1 = (3x - 1)(3x + 1)$$

$$12x^2 + 2x - 2 = 12(x - 1/3)(x + 1/2)$$

$$4x^3 - 9x^2 + 2x = x(4x^2 - 9x + 2) = 4x(x - 2)(x - 1/4)$$

$$4x^2 + 6x + 2 = 4(x + 1)(x + 1/2)$$

$$12x^2 + x - 1 = 12(x - 1/4)(x + 1/3)$$

Sustituimos.

$$\begin{aligned} & \left(\frac{-9x(x-2)}{(3x-1)(3x+1)} \cdot \frac{12(x-1/3)(x+1/2)}{4x(x-2)(x-1/4)} \right) \cdot \frac{4(x+1)(x+1/2)}{12(x-1/4)(x+1/3)} \\ & \left(\frac{-9x(x-2)}{(3x-1)(3x+1)} \cdot \frac{12(x-1/3)(x+1/2)}{4x(x-2)(x-1/4)} \right) \cdot \frac{4(x+1)(x+1/2)}{12(x-1/4)(x+1/3)} \\ & \left(\frac{-9x(x-2)}{(3x-1)(3x+1)} \cdot \frac{12(x-1/3)(x+1/2)}{4x(x-2)(x-1/4)} \right) \cdot \frac{4(x+1)(x+1/2)}{12(x-1/4)(x+1/3)} \\ & \left(\frac{-9x(x-2)12(x-1/3)(x+1/2)}{(3x-1)(3x+1)4x(x-2)(x-1/4)} \right) \cdot \frac{4(x+1)(x+1/2)}{12(x-1/4)(x+1/3)} \end{aligned}$$

$$\left(\frac{-9x(x-2)12(x-1/3)(x+1/2)}{9\left(x-\frac{1}{3}\right)\left(x+\frac{1}{3}\right)4x(x-2)(x-1/4)} \right) \cdot \frac{(x+1)(x+1/2)}{3(x-1)(x+1/3)}$$
$$\frac{-3(x-2)\left(x+\frac{1}{2}\right)}{\left(x+\frac{1}{3}\right)(x-2)(x-1/4)} \cdot \frac{(x+1)(x+1/2)}{3\left(x-\frac{1}{4}\right)\left(x+\frac{1}{3}\right)}$$
$$\frac{-9}{x+1}$$