

EJERCICIOS FRACCIONES ALGEBRAICAS

1.- Simplifica las fracciones algebraicas siguientes:

$$\begin{array}{llll} \text{a)} \frac{x^2 - 5x + 6}{x^2 - 2x} = & \text{b)} \frac{x^3 + 3x^2 + 3x + 1}{x^3 + 2x^2 + x} = & \text{c)} \frac{-9 + x^2}{x^2 + 2x - 15} = & \text{d)} \frac{x^4 - 1}{x^4 - x^3 - x^2 - x - 2} = \\ \text{e)} \frac{4x^3 - 4x}{x^6 + x^5} = & \text{f)} \frac{-2x^2 + x}{-2x^2 + 9x - 4} = & \text{g)} \frac{9x - x^3}{x^3 + 3x^2} = & \end{array}$$

2.- Suma y resta las siguientes fracciones algebraicas:

$$\begin{array}{llll} \text{a)} \frac{2x^2 - 5x}{x^2 - 9} - \frac{2x^2 - 4x + 3}{x^2 - 9} = & \text{b)} \frac{-3x + 1}{x + 1} - \frac{5x + 1}{x^2 + x} = & \text{c)} \frac{1}{x} - \frac{2 - x}{x} + \frac{3 - 2x}{x} = \\ \text{d)} \frac{2}{x - 2} - \frac{4}{x^2 - 2x} = & \text{e)} \frac{2}{x^2 - 16} - \frac{1}{x^2 + 4x} = & \text{f)} \frac{-2}{x^3} - \frac{5}{x^2} + \frac{3}{x} = \\ \text{g)} \frac{x}{x^2 - 3x - 4} - \frac{2x}{x^2 - 1} + \frac{x^2 - 6x - 4}{x^3 - 4x^2 - x + 4} = & & & \end{array}$$

3.- Multiplica las fracciones algebraicas:

$$\begin{array}{llll} \text{a)} \frac{2x + 1}{x^2 - 4} \cdot \frac{x + 2}{x - 5} = & \text{b)} \frac{2x + 4}{x^2 - 9} \cdot \frac{x + 3}{x + 2} = & \text{c)} \frac{x^3 - 5x^2 + 6x}{x + 1} \cdot \frac{x^2 - 1}{2x^3 - 6x^2} = \\ \text{d)} \frac{5x^3}{x + 1} \cdot \frac{x^2 + 2x + 1}{x^2 + x} = & \text{e)} \left(1 + \frac{1}{x^2 - 1}\right) \cdot \left(\frac{x + 1}{x}\right) = & \text{f)} \left(2 + \frac{8}{x - 2}\right) \cdot \frac{1}{x + 2} = \\ \text{g)} \left(\frac{1}{x} - \frac{2}{x - 1}\right) \cdot \frac{x^2}{x + 1} = & & & \end{array}$$

4.- Divide las fracciones:

$$\begin{array}{llll} \text{a)} \frac{1}{2x^2} : \frac{x + 3}{4x} = & \text{b)} \frac{1}{8x^3} : \frac{4x + 2}{3x^5} = & \text{c)} \frac{4x^2}{x + 1} : \frac{x^2 - x}{x^2 - 2x + 1} = & \text{d)} \frac{x + 2}{2x + 3} : \frac{x^2 - 4}{-6x - 4x^2} = \\ \text{e)} \frac{2x^2}{3x^2 - 3} : \frac{x}{x + 1} = & \text{f)} \frac{x^2 - 5x + 6}{2x + 1} : \frac{x - 2}{x} = & \text{g)} \frac{-x + 7}{x^2 - 1} : \frac{-x^2 + 5x + 14}{x^2 + 3x + 2} = & \end{array}$$

5.- Operaciones combinadas:

$$\begin{array}{llll} \text{a)} \frac{-8x}{x^2 + 4x + 4} + \frac{3x}{x^2 + 3x + 2} = & \text{b)} \frac{5x + 5}{x^2 + 2x} - \frac{5}{x^2} + \frac{4x - 5}{x + 2} = & \text{c)} \frac{x^2 - x - 2}{x^3 + 7x^2 + 10x} + \frac{1}{x^2 + 5x} - \frac{1}{x^3} = \\ \text{d)} \frac{1}{x^2} \cdot \left(\frac{3x^3 - 3x^2 - 4x}{2x - 3} - x^2\right) = & \text{e)} \left(\frac{-3x^2}{x^2 - 1} + 4\right) \cdot \left(\frac{x + 1}{x^2 - 4}\right) = & \text{f)} \left(\frac{1}{x} - 2 + x\right) \cdot \frac{x^3}{x^2 - 1} = \\ \text{g)} \left(\frac{2x^2 + 21}{(x - 3)^2} + \frac{7}{x - 3}\right) : \frac{2x + 7}{x^2 - 9} = & \text{h)} \left(1 - \frac{1}{x}\right) : \frac{3x - 3}{x^6} + \frac{1}{x} = & \text{i)} \left(\frac{2x}{x - 5} : \frac{3x^2}{x^2 - 25}\right) : \frac{2(x + 5)}{x} = \end{array}$$