

## Respuesta a los ejercicios

$$\begin{aligned} 1.) \quad & \frac{1}{x} + \frac{x}{x-1} - \frac{x(x-1)}{(x+1)(x-1)} = \\ & \frac{1}{x} + \frac{x}{x-1} - \frac{x}{x+1} = \\ & = \frac{(x+1)(x-1) + x^2(x+1) - x^2(x-1)}{x \cdot (x+1)(x-1)} = \\ & = \frac{x^2 - 1 + x^3 + x^2 - x^3 + x^2}{x \cdot (x+1)(x-1)} = \\ & = \frac{3x^2 - 1}{x \cdot (x+1)(x-1)} \end{aligned}$$

$$\begin{aligned} 2.) \quad & \frac{x-1 - (x-3)(x^2-1) - 3(x+3)}{(x-3)(x+3)} = \\ & \frac{x-1 - (x^3 - x - 3x^2 + 3) - 3x - 9}{(x-3)(x+3)} = \\ & \frac{x-1 - x^3 + x + 3x^2 - 3 - 3x - 9}{(x-3)(x+3)} = \\ & = \frac{-x^3 + 3x^2 - x - 13}{(x-3)(x+3)} \end{aligned}$$

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

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

$$= \frac{5x - 8}{(x+2)(3x-1)}$$

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

$$= \frac{1 + x(x^2 - 1) - 5(x^2 + 1 + 2x) + 5(x^2 + 1 - 2x)}{5(x+1)(x-1)} =$$

$$= \frac{1 + x^3 - x - 5x^2 - 5 - 10x + 5x^2 + 5 - 10x}{5(x+1)(x-1)} =$$

$$= \frac{x^3 - 21x + 1}{5(x+1)(x-1)}$$

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

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

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

$$= \frac{3x^2 - 4 - 4x - 8 - 2x + 4}{(x+2)(x-2)} =$$

$$= \frac{3x^2 - 6x - 8}{(x+2)(x-2)}$$

$$6.) \quad \frac{2x+3}{2(x-1)} - \frac{3x-2}{3(x+1)} - \frac{5}{6(x+1)(x-1)} =$$

$$\frac{3(x+1)(2x+3) - 2(x-1)(3x-2) - 5}{6(x+1)(x-1)} =$$

$$= \frac{(3x+3)(2x+3) - (2x-2)(3x-2) - 5}{6(x+1)(x-1)} =$$

$$= \frac{6x^2 + 9x + 6x + 9 - (6x^2 - 4x - 6x + 4) - 5}{6(x+1)(x-1)} =$$

$$= \frac{6x^2 + 9x + 6x + 9 - 6x^2 + 4x + 6x - 4 - 5}{6(x+1)(x-1)} =$$

$$= \frac{25x}{6(x+1)(x-1)}$$