

Reduce a común denominador y opera:

$$\text{a) } \frac{3}{x} + \frac{9}{x^2} \quad \text{b) } \frac{x}{x+1} + \frac{4}{3(x+1)} \quad \text{c) } \frac{2x}{x^2} + \frac{3}{x^2} - \frac{5}{3x}$$

$$\text{d) } \frac{x-2}{x-1} + \frac{2}{2x-2} \quad \text{e) } \frac{x-2}{4x} - \frac{3}{2x} - \frac{16}{x} \quad \text{f) } \frac{x+4}{x} - \frac{3x}{x-1}$$

$$\text{a) } \frac{3}{x} + \frac{9}{x^2} = \frac{3x}{x^2} + \frac{9}{x^2} = \frac{3x+9}{x^2}$$

$$\text{b) } \frac{x}{x+1} + \frac{4}{3(x+1)} = \frac{3x}{3(x+1)} + \frac{4}{3(x+1)} = \frac{3x+4}{3(x+1)}$$

$$\text{c) } \frac{2x}{x^2} + \frac{3}{x^2} - \frac{5}{3x} = \frac{6x}{3x^2} + \frac{9}{3x^2} - \frac{5x}{3x^2} = \frac{x+9}{3x^2}$$

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

$$\text{e) } \frac{x-2}{4x} - \frac{3}{2x} - \frac{16}{x} = \frac{x-2}{4x} - \frac{6}{4x} - \frac{64}{4x} = \frac{x-2-6-64}{4x} = \frac{x-72}{4x}$$

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