

Realizar las siguientes operaciones, simplificando el resultado hasta donde sea posible:

$$a) \frac{\left(\frac{x}{y}-1\right)\left(\frac{x}{y}+1\right)}{\left(\frac{x^2}{y^2}-1\right)\left(\frac{x^2}{y^2}+1\right)} : \frac{\left(\frac{2x}{3y}-\frac{3y}{2x}\right)\left(\frac{3y}{2x}-\frac{2x}{3y}\right)}{\frac{(x^2-y^2)^2+4x^2y^2}{(x-y)^2-(x+y)^2}}$$

$$b) \frac{1+\frac{2}{a}+\frac{1}{a^2}}{a+3+\frac{2}{a}} \cdot \frac{a-\frac{1}{a}}{1-\frac{2}{a}+\frac{1}{a^2}}$$

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