

FRACCIONES

Problema 57:

Simplifica la fracción:

$$\frac{(a^{-1}b^{-1} + c^{-1}d^{-1})^2 - (a^{-1}c^{-1} + b^{-1}d^{-1})^2}{(a^{-2} - d^{-2})(b^{-2} - c^{-2})}$$

Solución Problema 57:

$$\frac{(a^{-1}b^{-1} + c^{-1}d^{-1})^2 - (a^{-1}c^{-1} + b^{-1}d^{-1})^2}{(a^{-2} - d^{-2})(b^{-2} - c^{-2})} =$$

$$\frac{\left(\frac{1}{a} \frac{1}{b} + \frac{1}{c} \frac{1}{d}\right)^2 - \left(\frac{1}{a} \frac{1}{c} + \frac{1}{b} \frac{1}{d}\right)^2}{\left(\frac{1}{a^2} - \frac{1}{d^2}\right)\left(\frac{1}{b^2} - \frac{1}{c^2}\right)} =$$

$$= \frac{\frac{1}{a^2} \frac{1}{b^2} + \frac{1}{c^2} \frac{1}{d^2} + \frac{2}{abcd} - \frac{1}{a^2} \frac{1}{c^2} - \frac{1}{b^2} \frac{1}{d^2} - \frac{2}{abcd}}{\frac{1}{a^2 b^2} - \frac{1}{d^2 b^2} - \frac{1}{a^2 c^2} + \frac{1}{d^2 c^2}} =$$

$$\frac{\frac{1}{a^2} \frac{1}{b^2} + \frac{1}{c^2} \frac{1}{d^2} - \frac{1}{a^2} \frac{1}{c^2} - \frac{1}{b^2} \frac{1}{d^2}}{\frac{1}{a^2 b^2} + \frac{1}{d^2 c^2} - \frac{1}{a^2 c^2} - \frac{1}{d^2 b^2}} = 1$$