

FRACCIONES

Problema 56:

Simplifica la fracción:

$$\frac{(an - bm)^2 + (bp - cn)^2 + (cm - ap)^2 + (am + bn + cp)^2}{a^2 + b^2 + c^2}$$

Solución Problema 56:

$$\frac{(an - bm)^2 + (bp - cn)^2 + (cm - ap)^2 + (am + bn + cp)^2}{a^2 + b^2 + c^2}$$

$$\frac{(a^2n^2 + b^2m^2 - 2abnm) + (b^2p^2 + c^2n^2 - 2bpnc) + (c^2m^2 + a^2p^2 - 2cmap) + (a^2m^2 + 2ambn + 2amcp + b^2n^2 + 2bncp + c^2p^2)}{a^2 + b^2 + c^2}$$

$$\frac{a^2n^2 + a^2m^2 + a^2p^2 + b^2n^2 + b^2m^2 + b^2p^2 + c^2n^2 + c^2m^2 + c^2p^2}{a^2 + b^2 + c^2} =$$

$$\frac{p^2(a^2 + b^2 + c^2) + m^2(a^2 + b^2 + c^2) + n^2(a^2 + b^2 + c^2)}{a^2 + b^2 + c^2} = p^2 + m^2 + n^2$$