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или скалярного произведения $a^2 - b^2 = (a^2 - b^2)(a^2 + b^2)$

$$a = \sin^4 \alpha - \cos^4 \alpha = (\sin^2 \alpha - \cos^2 \alpha)(\sin^2 \alpha + \cos^2 \alpha) =$$

1 (ТЕОРЕМА ТРИГОНОМЕТРИЧЕСКАЯ)

$$= \sin^2 \alpha - \cos^2 \alpha = \sin^2 \alpha - (1 - \sin^2 \alpha) =$$

$$= \sin^2 \alpha - 1 + \sin^2 \alpha = 2 \sin^2 \alpha - 1$$

или скалярного произведения $(a^2 - b^2) = (a - b)(a + b)$

$$b = 1 - 4 \sin^2 \alpha \cos^2 \alpha = (1 - 2 \sin \alpha \cos \alpha)(1 + 2 \sin \alpha \cos \alpha) =$$

$\sin 2\alpha$

$\sin 2\alpha$

$$= (1 - \sin 2\alpha)(1 + \sin 2\alpha) = 1 - \sin^2 2\alpha$$

$$a - b = 2 \sin^2 \alpha - 1 - (1 - \sin^2 2\alpha) =$$

$$= 2 \sin^2 \alpha - 1 - 1 + \sin^2 2\alpha = \sin^2 2\alpha + 2 \sin^2 \alpha - 2 =$$

$$= (\sin(2 \cdot 60^\circ))^2 + 2(\sin 60^\circ)^2 - 2 =$$

$$= (\sin 120^\circ)^2 + 2(\sin 60^\circ)^2 - 2 = *$$

$$\sin 120^\circ = \sin(180^\circ - 60^\circ) = \sin 180^\circ \cdot \cos 60^\circ - \cos 180^\circ \cdot \sin 60^\circ =$$

$$= 0 \cdot \frac{1}{2} + \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2}$$

$$* = \left(\frac{\sqrt{3}}{2}\right)^2 + 2 \cdot \left(\frac{\sqrt{3}}{2}\right)^2 - 2 = \frac{3}{4} + \frac{6}{4} - \frac{8}{4} = \frac{3+6-8}{4} = \frac{1}{4}$$

СПАСИБО 😊