

# Giải bài 4 trang 155 sgk toán Đại Số lớp 10

**Đề bài:**

Rút gọn biểu thức

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a)  $\frac{2 \sin 2\alpha - \sin 4\alpha}{2 \sin 2\alpha + \sin 4\alpha}$

b)  $\tan \alpha \left( \frac{1 + \cos^2 \alpha}{\sin \alpha} - \sin \alpha \right)$

c)  $\frac{\sin(\frac{\pi}{4} - \alpha) + \cos(\frac{\pi}{4} - \alpha)}{\sin(\frac{\pi}{4} - \alpha) - \cos(\frac{\pi}{4} - \alpha)}$

d)  $\frac{\sin 5\alpha - \sin 3\alpha}{2 \cos 4\alpha}$

**Đáp án:**

a) 
$$\begin{aligned} & \frac{2 \sin 2\alpha - \sin 4\alpha}{2 \sin 2\alpha + \sin 4\alpha} \\ &= \frac{2 \sin 2\alpha - 2 \sin 2\alpha \cdot \cos 2\alpha}{2 \sin 2\alpha + 2 \sin 2\alpha \cdot \cos 2\alpha} \\ &= \frac{1 - \cos 2\alpha}{1 + \cos 2\alpha} = \frac{2 \sin^2 \alpha}{2 \cos^2 \alpha} \\ &= \tan^2 \alpha. \end{aligned}$$

b) 
$$\begin{aligned} & \tan \alpha \left( \frac{1 + \cos^2 \alpha}{\sin \alpha} - \sin \alpha \right) \\ &= \frac{\sin \alpha}{\cos \alpha} \left( \frac{1 + \cos^2 \alpha - \sin^2 \alpha}{\sin \alpha} \right) \\ &= \frac{\sin \alpha}{\cos \alpha} \cdot \frac{2 \cos^2 \alpha}{\sin \alpha} = 2 \cos \alpha. \end{aligned}$$

$$\begin{aligned}
 c) \quad & \frac{\tan\left(\frac{\pi}{4} - \alpha\right) + 1}{\tan\left(\frac{\pi}{4} - \alpha\right) - 1} \\
 &= \left( \frac{\tan \frac{\pi}{4} - \tan \alpha}{1 + \tan \frac{\pi}{4} \cdot \tan \alpha} + 1 \right) : \left( \frac{\tan \frac{\pi}{4} - \tan \alpha}{1 + \tan \frac{\pi}{4} \cdot \tan \alpha} - 1 \right) \\
 &= \left( \frac{1 - \tan \alpha + 1 + \tan \alpha}{1 + \tan \alpha} \right) : \left( \frac{1 - \tan \alpha - 1 - \tan \alpha}{1 + \tan \alpha} \right) \\
 &= \frac{-1}{\tan \alpha} = -\cot \alpha
 \end{aligned}$$

$$d) \frac{\sin 5\alpha - \sin 3\alpha}{2 \cos 4\alpha} = \frac{2 \cos \frac{5\alpha + 3\alpha}{2} \sin \frac{5\alpha - 3\alpha}{2}}{2 \cos 4\alpha} = \sin \alpha$$