

مثالها

مثال) عبارت های زیر را به مجموع یا تناقض دو تابع مثلثاتی تبدیل کنید .

1) $A = \sin 5x \cdot \sin 7x$

2) $A = \sin 105^\circ \cos 75^\circ$

3) $A = \sin(11^\circ, 37') \cdot \cos(78^\circ, 53')$

4) $A = \cos \frac{a}{2} \cdot \cos \frac{3a}{2}$

5) $A = \cos(18^\circ, 27') \cos(17^\circ, 3')$

6) $A = \sin \frac{a}{3} \cdot \sin \frac{2a}{3}$

7) $A = \cos(a - b) \cdot \cos(a + b)$

8) $A = \sin\left(a - \frac{\pi}{3}\right) \cdot \cos\left(a + \frac{\pi}{3}\right)$

9) $A = \sin \frac{a}{2} \cdot \sin\left(\frac{a}{2} - \frac{\pi}{4}\right)$

10) $A = \sin(a + b - c) \sin(a + b + c)$

11) $A = 2 \sin 3x \sin x + \cos 4x$

12) $A = 2 \sin\left(x + \frac{\pi}{6}\right) \cdot \cos\left(x - \frac{\pi}{6}\right) - \frac{\sqrt{3}}{2}$

مثال) درستی تساوی های زیر را تحقیق کنید.

13) $2 \sin(45 + \alpha) \sin(45 - \alpha) = \cos 2\alpha$

14) $\frac{2 \sin \alpha \cdot \cos 3\alpha}{\sin 2\alpha} = 2 \cos 2\alpha - 1$

15) $\sin \alpha \cdot \sin(\alpha + 2\beta) - \sin \beta \cdot \sin(2\alpha + \beta) = \sin^2 \alpha - \sin^2 \beta$

16) $\sin(\alpha + \beta) \cdot \sin(3\alpha - 3\beta) = \sin^2(2\alpha - \beta) - \sin^2(2\beta - \alpha)$

17) $\cos \alpha \cdot \cos(\alpha + 2\beta) - \cos \beta \cdot \cos(2\alpha + \beta) = \sin^2 \alpha - \sin^2 \beta$

18) $\frac{\sin \alpha \sin 2\alpha + \sin 3\alpha \sin 6\alpha + \sin 4\alpha \sin 13\alpha}{\sin \alpha \cos 2\alpha + \sin 3\alpha \cos 6\alpha + \sin 4\alpha \cos 13\alpha} = \tan 9\alpha$

19) $\sin(3\alpha + \beta) \sin(3\alpha - \beta) - \sin(\alpha + \beta) \sin(\alpha - \beta) = \sin 4\alpha \sin 2\alpha$

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$$20) \sin \frac{\pi}{12} \cdot \sin \frac{7\pi}{12} = \frac{1}{4}$$

$$21) \sin \frac{2\pi}{7} + \sin \frac{4\pi}{7} - \sin \frac{6\pi}{7} = 4 \sin \frac{\pi}{7} \cdot \sin \frac{3\pi}{7} \cdot \sin \frac{5\pi}{7}$$

$$22) \frac{\sin 7x}{\sin x} - 2 \cos 2x - 2 \cos 4x - 2 \cos 6x = 1$$

$$23) \frac{1}{2 \sin a} [\sin(a+b) + \sin(a-b)] = \cos b$$

$$24) A = \tan(a+b+c) - \tan a - \tan b - \tan c$$

$$25) 4 \sin 20^\circ \sin 80^\circ - 2 \sin 10^\circ = 1$$

$$26) \sin \alpha + \sin \beta + \sin \gamma - \sin(\alpha + \beta + \gamma) = 4 \sin \frac{\alpha + \beta}{2} \cdot \sin \frac{\beta + \gamma}{2} \cdot \sin \frac{\gamma + \alpha}{2}$$

$$27) \frac{1 - 4 \sin 10^\circ \sin 70^\circ}{\sin 10^\circ} = 2$$

$$28) \frac{2 \sin a \cdot \cos 3a}{\sin 2a} = 2 \cos 2a - 1$$

$$29) 4 \cos \frac{A}{2} \cdot \cos \frac{B}{2} \cdot \cos \frac{C}{2} = \sin A + \sin B + \sin C$$