

$$\cot a = \frac{\cos a}{\sqrt{1-\cos^2 a}}$$

$$\frac{1}{\sqrt{\cos^2 a}} - \frac{1}{\cot a} = \frac{1-\sin a}{|\cos a|}$$

α انتهای کمان = ?

سوال ۱

sin α > 0 ⇒ |sin α|

$$\frac{1}{|\cos a|} - \frac{\sin a}{\cos a} = \frac{1-\sin a}{|\cos a|} \Rightarrow \cos a > 0$$

ربع اول = انتهای کمان α ⇒

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$$\sin 2k = \frac{m-1}{4}, -\frac{\pi}{12} < k < \frac{5\pi}{12}$$

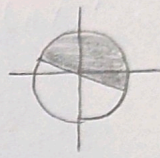
m مجموع مقادیر = ?

سوال ۲

$$-\frac{\pi}{12} < k < \frac{5\pi}{12} \rightarrow -\frac{\pi}{6} < 2k < \frac{5\pi}{6} \rightarrow -\frac{1}{2} < \sin 2k \leq 1$$

$$\Rightarrow -\frac{1}{2} < \frac{m-1}{4} \leq 1 \rightarrow -2 < m-1 \leq 4 \rightarrow -1 < m \leq 5$$

⇒ (-1, 5]



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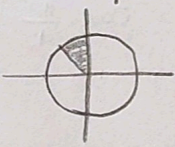
$$\tan k + \cot k = -3, 3\pi < k < 4\pi$$

$$\frac{1}{\sin^3 k + \cos^3 k} = ?$$

سوال ۳

$$\tan k + \cot k = -3 \rightarrow \frac{1}{\sin k} = -3 \rightarrow \frac{1}{-3} = \sin k \cos k$$

$$3\pi < k < 4\pi \rightarrow \frac{3\pi}{4} < k < \pi$$

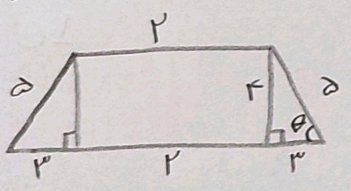


1, 1/5

$$\frac{1}{\sin^3 k + \cos^3 k} = \frac{1}{(\sin k + \cos k)(1 - \sin k \cos k)} = \frac{1}{\frac{1}{-3} \cdot \frac{4}{-3}} = \frac{3\sqrt{3}}{4}$$

زاویه حاده بین ساق و قاعده A: cos θ = 0.4, ارتفاع = 2, مساحت نوزده = ?

سوال ۴



$$S_{\text{نوزده}} = \frac{(2+4) \times 2}{2} = 20$$

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$$\tan(18^\circ) \tan(-14^\circ) - \sin(1.9^\circ) \cos(25^\circ) = k \cos^2 15 \quad k = ?$$

سوال ۵

$$\frac{\tan(18^\circ) \tan(-14^\circ) - \sin(1.9^\circ) \cos(25^\circ)}{-\cot 15 \tan 15} = \frac{-\sin 15 \cos 15}{\sin 15}$$

$$\rightarrow -1 + \sin^2 15 = -\cos^2 15$$

$$-\cos^2 15 = k \cos^2 15 \rightarrow k = -1$$

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$A = \sqrt{3} \cos(210^\circ) \sin(243^\circ) - \sqrt{2} \sin(135^\circ) \cos(153^\circ) = ? \cos(27^\circ)$  سوال 9

$\frac{\sqrt{3} \cos(210^\circ) \sin(243^\circ) - \sqrt{2} \sin(135^\circ) \cos(153^\circ)}{-\frac{\mu}{\nu}} = \frac{\frac{3}{4} - 2\sqrt{2}}{\pi - 2\sqrt{2}}$

$\Rightarrow \frac{\mu}{\nu} \cos 27^\circ + \cos 27^\circ = \frac{2}{\pi} \cos 27^\circ \Rightarrow \frac{2}{\pi}$

$f(x) = 14 \cos^2(3x) \cos^2(4x) \cos^2(12x) \cos^2(14x) \quad f\left(\frac{\pi}{34}\right) = ?$  سوال 7

$\Rightarrow f\left(\frac{\pi}{34}\right) = 14 \cos^2\left(\frac{3\pi}{34}\right) \cos^2\left(\frac{4\pi}{34}\right) \cos^2\left(\frac{12\pi}{34}\right) \cos^2\left(\frac{14\pi}{34}\right) =$

$14 \cos^2\left(\frac{\pi}{17}\right) \cos^2\left(\frac{2\pi}{17}\right) \cos^2\left(\frac{6\pi}{17}\right) \cos^2\left(\frac{7\pi}{17}\right) =$

$(14 \times \frac{1+\sqrt{3}}{4}) \left(\frac{1}{4}\right) \left(\frac{1}{4}\right) \left(\frac{1}{4}\right) = \frac{3 + (1+\sqrt{3})}{14}$

$\frac{1 - \sin k}{1 + \sin k} = f \quad \tan \frac{k}{\nu} = ? \quad 1 - \sin k = \sin \frac{\nu}{2} + \cos \frac{\nu}{2} - \nu \sin \frac{\nu}{2} \cos \frac{\nu}{2}$  سوال 5

$\frac{1 - \sin k}{1 + \sin k} = \left( \frac{\sin \frac{k}{\nu} - \cos \frac{k}{\nu}}{\sin \frac{k}{\nu} + \cos \frac{k}{\nu}} \right)^2 \Rightarrow -\mu \cos \frac{k}{\nu} = \sin \frac{k}{\nu} \Rightarrow \tan \frac{k}{\nu} = -\mu$

$\frac{\sin \theta}{1 - \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = k \cot \frac{\theta}{\nu} \quad k = ?$  سوال 4

$\frac{\sin \theta}{1 - \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = \frac{\sin^2 \theta + 1 - \cos^2 \theta}{\sin \theta (1 - \cos \theta)} = \frac{\nu \sin \theta (1 + \cos \theta)}{\frac{1 - \cos^2 \theta}{\sin \theta}} = \frac{\nu (1 + \cos \theta)}{\cot \theta} =$

$\nu \cot \frac{\theta}{\nu} \Rightarrow \nu \cot \frac{\theta}{\nu} = k \cot \frac{\theta}{\nu} \Rightarrow k = \nu$

$\sin a = \frac{\sqrt{2}}{10} \quad \cos\left(\frac{11\pi}{10} + a\right) = ?$  سوال 10  
 $\cos a = \frac{-\nu}{2\sqrt{2}}$

$\cos\left(\frac{11\pi}{10} + a\right) = -\frac{\sqrt{2}}{\nu} \cos a - \frac{\sqrt{2}}{\nu} \sin a = -\frac{\sqrt{2}}{\nu} (\cos a + \sin a) =$

$-\frac{\sqrt{2}}{\nu} \left( \frac{-\nu}{2\sqrt{2}} + \frac{1}{2\sqrt{2}} \right) = \frac{4}{10}$