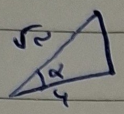
SUBJECT:

Year: Month: Day:

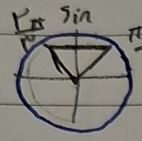
۲۹

تست سنتی کنکور یازدهم ریاضی ← تکلیف ۲۷



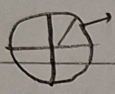
$\frac{1}{2} \times 4^2 \times \sqrt{3} \times \sin\alpha = 12 \sin\alpha = \frac{9}{2}$ ①

$\sin\alpha = \frac{9}{2} \times \frac{\sqrt{3}}{12} = \frac{\sqrt{3}}{2}$

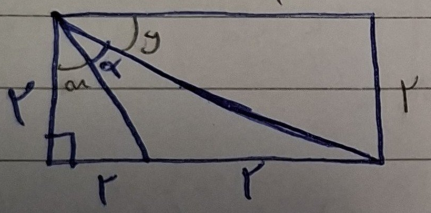


$\alpha = 60^\circ, 120^\circ \rightarrow \frac{\frac{2\pi}{3}}{\frac{\pi}{3}} = 2$ ② ۲ برابر

$\cot\alpha = ?$



$\alpha + \gamma + \alpha = 90^\circ \rightarrow \alpha = \frac{\pi}{2} - (\alpha+\gamma)$ ①



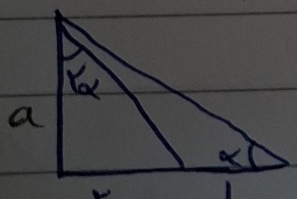
$\tan\alpha = \frac{2}{2} = 1$ $\quad \tan\gamma = \frac{2}{4} = \frac{1}{2}$

$\cot\alpha = \cot\left(\frac{\pi}{2} - (\alpha+\gamma)\right) = \tan(\alpha+\gamma)$ ②

$\tan(\alpha+\gamma) = \frac{\tan\alpha + \tan\gamma}{1 - \tan\alpha\tan\gamma} = \frac{1 + \frac{1}{2}}{1 - (1 \times \frac{1}{2})} = \frac{\frac{3}{2}}{\frac{1}{2}} = 3$ ③

$\cot\alpha = ?$ ③

$\tan(2\alpha) = \frac{2\tan\alpha}{1 - \tan^2\alpha}$



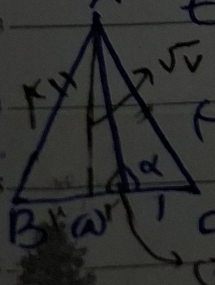
$\frac{2}{a} = \frac{\frac{2a}{3}}{1 - \frac{a^2}{9}} \rightarrow \frac{1}{a} = \frac{3a}{9 - a^2}$ ②

$3a^2 = 9 - a^2$

$4a^2 = 9 \rightarrow a = +\frac{3}{2}$ ق ق

$a = -\frac{3}{2}$ ق ق غ

$\cot\alpha = \frac{3}{a} = \frac{3}{\frac{3}{2}} = 2$ ④



$\tan\alpha = ?$ $\quad AH^2 = 14 - 9 = 5$ ④ (ریشه‌گویا ← عدد مربع کامل اتخاذ است)

$AH^2 = (\sqrt{5})^2 - (2)^2 \rightarrow AH = \sqrt{5}$

$\tan(\pi - \alpha) = \frac{\sqrt{5}}{2}$ $\quad$ (خط کمکی بزنید)

$-\tan\alpha = \frac{\sqrt{5}}{2} \Rightarrow \tan\alpha = \frac{-\sqrt{5}}{2}$ ②

Sanaz

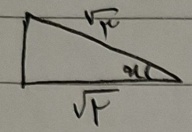
Page : ( )

SUBJECT:

Year: Month: Day:

$3\sin^2\alpha + \cos^2\alpha = \frac{4}{5}$ $\quad \tan^2\alpha = ?$ $\quad \sin^2\alpha + \cos^2\alpha = 1$ (a)

$4\sin^2\alpha + 1 = \frac{4}{5} \rightarrow \sin^2\alpha = \frac{1}{5} \rightarrow \sin\alpha = \frac{1}{\sqrt{5}}$ (b)



$5 - 1 = 4$ $\quad \tan^2\alpha = \left(\frac{1}{\sqrt{4}}\right)^2 = \frac{1}{4}$

$\frac{\sin^2\alpha + 4\cos^2\alpha}{1+\cos^2\alpha} - \frac{\cos^4\alpha + 4\sin^2\alpha}{1+\sin^2\alpha}$ (c)

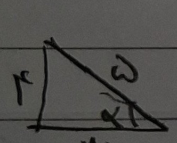
$1+\cos^2\alpha \rightarrow 1-\sin^2\alpha$ $\quad 1-\sin^2\alpha \rightarrow 1-\cos^2\alpha$

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

$\frac{\sin^2\alpha + 4 - 4\sin^2\alpha}{2-\sin^2\alpha} = \frac{(2-\sin^2\alpha)}{2-\sin^2\alpha}$ $\quad \frac{\cos^4\alpha + 4 - 4\cos^2\alpha}{2-\cos^2\alpha} = \frac{(2-\cos^2\alpha)^2}{2-\cos^2\alpha}$

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

$\tan\alpha = \frac{1}{2}$ (d) $\quad \sin\left(\frac{4\pi}{2}+\alpha\right)\cos\left(\frac{7\pi}{2}-\alpha\right) - \tan\left(\alpha - \frac{3\pi}{2}\right)$ (e)



$(+\cos\alpha) \times (-\sin\alpha) + (\cot\alpha)$ (b)

$\frac{-2}{\omega} \times \frac{+1}{\omega} + \frac{3\omega}{2} = 0,27$

$\frac{-12}{25\omega} = \frac{-48}{100} + \frac{+75}{100}$

$3\cos^2\alpha + \sqrt{3}\sin\alpha - \sqrt{2}\cos\alpha$ $\quad \alpha = \frac{\pi}{12}$ (f)

$\sin\alpha - \cos\alpha = \sqrt{2}\sin\left(\alpha - \frac{\pi}{4}\right)$

$\sqrt{2}(\sin\alpha - \cos\alpha) = 2\sin\left(\frac{\pi}{12} - \frac{\pi}{4}\right) = 2\times -\frac{1}{2} = -1$ I (b)

$\frac{-\pi}{6}$

$3\cos\left(4\times\frac{\pi}{12}\right) = 3\times\frac{1}{2} = \frac{3}{2}$ II $\quad$ II − I $= \frac{3}{2} - 1 = \frac{1}{2}$

$\frac{\pi}{3}$

SUBJECT:

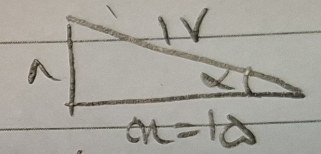
Year: Month: Day:

(۹)

$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} \qquad \tan\left(\frac{\alpha}{2}\right) = \frac{1}{3}$$

(۶)

$$\sin\alpha = \frac{2\tan\left(\frac{\alpha}{2}\right)}{1+\tan^2\left(\frac{\alpha}{2}\right)} = \frac{\frac{1}{3}}{\frac{10}{9}} = \frac{3}{10}$$



$$\cos\alpha = \frac{15}{17}$$

$$\frac{\tan\alpha - \sin\alpha}{\sin\alpha - \cos\alpha} = \frac{\frac{3}{15} - \frac{3}{17}}{\frac{3}{17} - \frac{15}{17}} = \frac{-14}{105} \qquad \tan\alpha = \frac{3}{15}$$

(۱۰)

$$2\sin\alpha < \sin^2\alpha \qquad \frac{\cot\alpha}{\sin\alpha} > 0$$

انتهای کمان α در کدام ربع است؟

(۶)

$$2\sin\alpha < \sin\alpha\cos\alpha \quad (\sin\alpha > 0)$$

$$2 < \cos\alpha \quad (\cos\alpha < 1)$$

$$\frac{\cot\alpha}{\sin\alpha} = \frac{\cos\alpha}{\sin^2\alpha} > 0 \Rightarrow \cos\alpha > 0$$

$\cos\alpha > 0$ و $\sin\alpha > 0$ ⇒ ربع اول

→ زیرا: $-1 \le \cos\alpha \le 1$