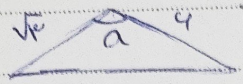
Subject:
Year: Month: Day:

تکلیف ترم کانون : سوال ۲۷

page: ( )

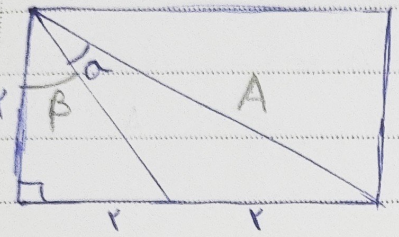


$S_{\triangle} = \frac{1}{2} AB \sin a \rightarrow 4\sqrt{3} = \frac{4\sqrt{3}}{2} \times \sin a \rightarrow$ ①

$\sin a = \frac{4\sqrt{3}}{4\sqrt{3}} = \frac{\sqrt{3}}{2} \rightarrow \sin a = 60°$

$\min a = 30°$

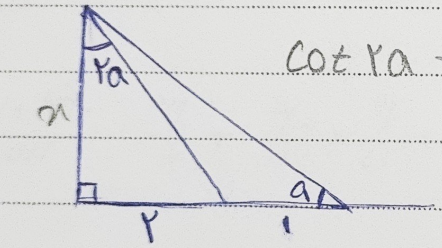
$\frac{180}{30} = 6$



② $\tan\beta = \frac{2}{2} = 1$, $a + \beta = \theta \rightarrow \tan\theta = \frac{4}{2} = 2$

$\rightarrow \tan a = \tan(\theta - \beta) = \frac{\tan\theta - \tan\beta}{1 + \tan\theta \tan\beta} \rightarrow$

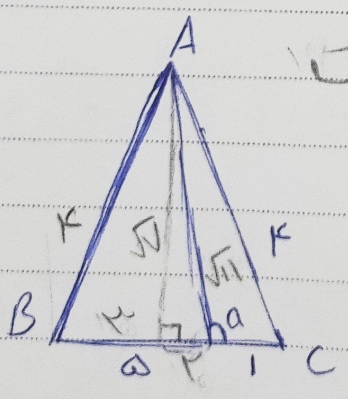
$\tan a = \frac{2-1}{1+2} = \frac{1}{3} \rightarrow \cot a = 3$



③ $\cot 2a = \frac{x}{2}$, $\cot a = \frac{3}{x}$, $\cot 2a = \frac{\cot^2 a - 1}{2\cot a} \rightarrow$

$\frac{x}{2} = \frac{\frac{9 - x^2}{6x}}{\frac{9}{x}} \rightarrow \frac{x}{2} = \frac{9 - x^2}{6x} \rightarrow$

$3x^2 = 9 - x^2 \rightarrow x^2 = \frac{9}{4} \rightarrow x = \frac{3}{2} \rightarrow \cot a = 2$



④ ارتفاع وارد بر ضلع ۴ این مثلث ۰ است

$h_a = \sqrt{7} \rightarrow \tan(180 - a) = -\tan a \rightarrow$

$-\tan a = \frac{\sqrt{7}}{2} \rightarrow \tan a = -\frac{\sqrt{7}}{2}$

$2\sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow \sin^2 x + \cos^2 x + \sin^2 x = \frac{4}{3} \rightarrow$ ⑤

$\sin^2 x = \frac{1}{3} \rightarrow \cot^2 x + 1 = \frac{1}{\sin^2 x} \rightarrow \cot^2 x = 2 \rightarrow \tan^2 x = \frac{1}{2}$

Arman

page: ( )

Subject:

Year: Month: Day:

$(1-\cos^2 a)^2$ $(1-\sin^2 a)^2$

(۹)

$$\frac{\sin^4 a + 2\cos^2 a}{1+\cos^2 a} - \frac{\cos^4 a + 2\sin^2 a}{1+\sin^2 a} \Rightarrow$$

$$\frac{\cos^4 a + 2\cos^2 a + 1}{1+\cos^2 a} - \frac{\sin^4 a - 2\sin^2 a + 1}{1+\sin^2 a} \rightarrow$$

$$\frac{(1+\cos^2 a)^2}{1+\cos^2 a} - \frac{(1+\sin^2 a)^2}{(1+\sin^2 a)} = 1+\cos^2 a - 2+\sin^2 a = \cos^2 a - \sin^2 a$$

(۷)

$$\sin\left(\frac{9\pi}{2}+a\right)\cos\left(\frac{7\pi}{2}-a\right) - \tan\left(a-\frac{3\pi}{2}\right) \rightarrow \tan\left(\frac{3\pi}{2}-a\right)$$

$$\cos a \times -\sin a + \cot a \qquad \text{(3, 4, 5)} \rightarrow \frac{3}{5}\times\frac{-4}{5} + \frac{3}{4} = \frac{-24+75}{100}$$

$$= 0,27$$

(۸)

$$(2\cos 4x + \sqrt{2}\sin x - \sqrt{2}\cos x) = 2\cos\frac{\pi}{3} - \sqrt{2}(\cos x - \sin x)$$

$$\rightarrow \frac{3}{2} - \sqrt{2}\left(\frac{\cos^2 x - \sin^2 x}{\cos x + \sin x}\right) = \frac{3}{2} - \sqrt{2}\left(\frac{\cos\frac{\pi}{4}}{\sqrt{2}\sin\left(\frac{\pi}{12}+\frac{\pi}{4}\right)}\right) \rightarrow \sin\frac{\pi}{3}$$

$$= \frac{3}{2} - \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{2}$$

(۹)

$$\tan a = \frac{2\tan\left(\frac{a}{2}\right)}{1-\left(\tan\left(\frac{a}{2}\right)\right)^2} \Rightarrow \tan a = \frac{\frac{1}{2}}{\frac{15}{17}} \rightarrow \frac{8}{15}$$

(8, 15, 17)

$$\frac{\frac{8}{15} - \frac{8}{17}}{\frac{8}{17} - \frac{15}{17}} = \frac{8(17-15)}{\frac{15\times 17}{8-15}} = \frac{14}{120}$$

Arman

Subject:

Year: Month: Day:

(۱۵)

$-1 < \cos a < 1 \rightarrow$ مثبت

$2\sin a < 2\sin a \cos a \rightarrow 2\sin a(1-\cos a) < 0 \rightarrow \sin a < 0$ ← سوم یا چهارم

$\frac{\cot a}{\sin a} > 0 \longrightarrow \frac{\cos a}{\sin^2 a} > 0 \rightarrow \cos a > 0 \longrightarrow$ اول یا چهارم

→ ناحیه مشترک