پارسا ضیائی ۲۰ عالی نوشتی! تکلیف شماره ۱۶ - دهم بسر A

Subject: Date

۱- (۲)

الف) $27^\circ \to rad$ $\quad \frac{27}{180} = \frac{x}{\pi} \Rightarrow \frac{3}{20} = \frac{x}{\pi} \Rightarrow x = \frac{3\pi}{20}$ ✓

ب) $125^\circ \to rad \longrightarrow \frac{125}{180} = \frac{x}{\pi} \Rightarrow x = \frac{25\pi}{36}$ ✓

ج) $\frac{5\pi}{12} rad \to$ درجه $\to \frac{\frac{5\pi}{12}}{\pi} = \frac{x}{180} \Rightarrow x = \frac{5\times 180}{12} = 75^\circ$ ✓

د) $\frac{4\pi}{9} rad \to$ درجه $\longrightarrow \frac{\frac{4\pi}{9}}{\pi} = \frac{x}{180} \Rightarrow x = \frac{4\times 180}{9} = 80^\circ$ ✓

۲- (۲)

$\frac{\frac{125a}{9}}{\frac{200}{...}} = \frac{D}{180} \Rightarrow \frac{5}{72}a = \frac{D}{180} \Rightarrow D = \frac{5\times 180}{72}a = 12/5a$ ✓ $, \frac{\frac{a\pi}{8}}{\pi} = \frac{D}{180} \Rightarrow D = 22/5a$ ✓

$10a + 12/5a + 22/5a = 180 \Rightarrow 45a = 180 \Rightarrow a = \frac{180}{45} = 4^\circ$ ✓

۳- (۲)

الف) $\cos 90^\circ \cos 30^\circ - \sin 60 \sin 30 - \tan 45^\circ + 2\cot 45^\circ = 2 - 1 = 1$ ✓

$\frac{1}{2}\times\frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4} \quad \frac{\sqrt{3}}{2}\times\frac{1}{2} = \frac{\sqrt{3}}{4} \quad -1 \quad 2$

ب) $\frac{\tan^2 30^\circ + \tan 45^\circ + \tan^2 60^\circ}{\cot 30^\circ - \cot 60^\circ} = \frac{\frac{1}{3}+1+3}{\sqrt{3}-\frac{1}{\sqrt{3}}} = \frac{\frac{13}{3}}{\frac{3-1}{\sqrt{3}}} = \frac{13\sqrt{3}}{6}$ ✓

$\sqrt{3} \quad \frac{1}{\sqrt{3}}$

۴- (۲)

$-\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ = \sin^2\theta \Rightarrow \frac{2}{4} = \sin^2\theta$

$-\frac{1}{2}\times\frac{1}{2} = -\frac{1}{4} \quad \frac{\sqrt{3}}{2}\times\frac{\sqrt{3}}{2} = \frac{3}{4}$

غیرقابل قبول چون θ حاده است.

$1 + \cot^2\theta = \frac{1}{\sin^2\theta} \Rightarrow 1 + \cot^2\theta = 2 \Rightarrow \cot^2\theta = 1 \Rightarrow \tan\theta = -1$ ✗ $, +1$ ✓

۵- (۲)

$\frac{2\tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 60)^2} = \tan\theta \Rightarrow \frac{\frac{2}{\sqrt{3}}(1-\frac{1}{3})}{(1-\frac{1}{3})^2} \Rightarrow \frac{\frac{2}{\sqrt{3}}}{\frac{2}{3}} = \frac{3}{\sqrt{3}}$

$\tan\theta = \frac{3}{\sqrt{3}} \to \theta = 60^\circ$ ✓ $, 240^\circ$ ✗ $\quad \frac{60}{180} = \frac{x}{\pi} \Rightarrow x = \frac{\pi}{3}$ ✓

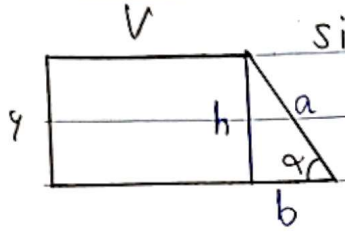
۶- (۲)

$\frac{3\sin\theta - \cos\theta}{\sin\theta - 4\cos\theta} \to \frac{\frac{15}{\sqrt{26}} - \frac{1}{\sqrt{26}}}{\frac{5}{\sqrt{26}} - \frac{4}{\sqrt{26}}} = \frac{14}{1} = 14$ یا $\frac{\frac{-15}{\sqrt{26}} - \frac{-1}{\sqrt{26}}}{\frac{-5}{\sqrt{26}} - \frac{-4}{\sqrt{26}}} = \frac{-14}{-1} = 14$ ✓

$\tan\theta = 5 \Rightarrow 1 + \tan^2\theta = \frac{1}{\cos^2\theta} \Rightarrow 1 + 25 = \frac{1}{\cos^2\theta} \Rightarrow \cos\theta = \pm\frac{1}{\sqrt{26}} \to \frac{1}{26} + \sin^2\theta = 1 \Rightarrow \sin\theta = \pm\frac{5}{\sqrt{26}}$

Subject: Date

۷- (۲)

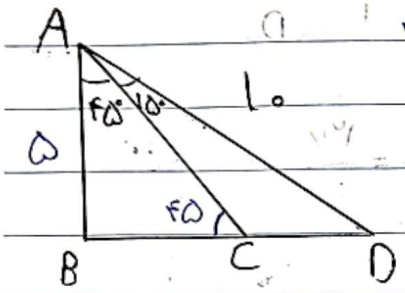


$\sin a = \frac{۹}{۱۵} \Rightarrow \frac{h}{a} = \frac{۹}{۱۵} \Rightarrow \frac{۹}{a} = \frac{۹}{۱۵} \Rightarrow a = ۱۵$

$a = ۱۵, h = ۹ \Rightarrow b = \sqrt{۱۵^۲ - ۹^۲} = ۱۲$

$محیط = ۹ + ۷ + ۱۵ + ۱۲ + ۷ = ۴۸$ ✓

۸- (۲)



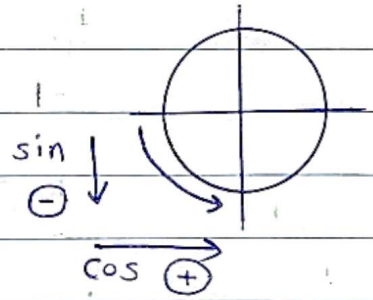
$۴۵° + ۱۵° = ۶۰° \rightarrow \sin ۶۰° = \frac{BD}{۱۵} \Rightarrow BD = \frac{۱۵\sqrt{۳}}{۲} = ۵\sqrt{۳}$

$AB = \sqrt{۱۵^۲ - (۵\sqrt{۳})^۲} = \sqrt{۱۰۰ - ۷۵} = ۵ \Rightarrow BC = ۵$

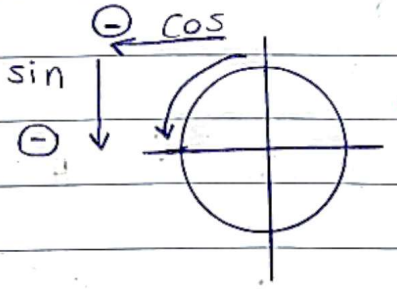
$CD = BD - BC = ۵\sqrt{۳} - ۵$ ✓

۹- (۲)

الف) ربع سوم ✓



ب) ربع دوم ✓



۱۰- (۲)

$1 + \tan^۲ x = \frac{1}{\cos^۲ x} \Rightarrow 1 + \frac{۱}{۹} = \frac{1}{\cos^۲ x} \Rightarrow \frac{۱۰}{۹} = \frac{1}{\cos^۲ x} \Rightarrow \cos^۲ x = \frac{۹}{۱۰}$

$\sin^۲ x + \cos^۲ x = 1 \Rightarrow \sin^۲ x + \frac{۹}{۱۰} = 1 \Rightarrow \sin^۲ x = \frac{۱}{۱۰}$

$\Rightarrow \sin x \begin{cases} + \frac{۱}{\sqrt{۱۰}} \times \\ - \frac{۱}{\sqrt{۱۰}} \checkmark \end{cases}$

x در ناحیه سوم است و $\sin x < ۰$ ✓