(A)

مثلثات (۱۲) — زینب تاجی

Subject: Year Month Day

۱-

$$\frac{D}{180} = \frac{G}{200} = \frac{Rad}{\pi}$$

$$27^\circ = ?\ rad \Rightarrow \frac{27}{180} = \frac{rad}{\pi} = \frac{27\pi}{180} = \frac{3\pi}{20}$$

$$125^\circ = ?\ rad \Rightarrow \frac{125}{180} = \frac{rad}{\pi} , \frac{125\pi}{180} = rad = \frac{25\pi}{36}$$

$$\frac{5\pi}{12}\ rad = ?x^\circ \Rightarrow \frac{\frac{5\pi}{12}}{\pi} = \frac{D}{180} = \frac{5}{12} = \frac{D}{180} \Rightarrow 75^\circ$$

$$\frac{4\pi}{9}\ rad = ?(x)^\circ \Rightarrow \frac{\frac{4\pi}{9}}{\pi} = \frac{D}{180} = \frac{4}{9} = \frac{D}{180} \Rightarrow 80^\circ$$

2-

$$(10a)^\circ , \frac{125a}{9} G , \frac{9a}{8} Rad = ?(x)^\circ$$

$$(10a)^\circ \qquad \frac{D}{180} = \frac{\frac{125a}{9}}{200} = \frac{5a}{72} \qquad \frac{D}{180} = \frac{\frac{9a}{8}}{\pi} = \frac{D}{180} = \frac{a}{8} \Rightarrow (22/5a)^\circ$$

$$(12/5a)^\circ \Leftarrow \frac{D}{180} = \frac{5a}{72}$$

$$10a + 12/5a + 22/5a = 180 \qquad \boxed{a = 4^\circ}$$

$$a(\underbrace{10 + 12/5 + 22/5}_{45}) = 180$$

3-

$$\cos 60^\circ \cos 30^\circ - \sin 60^\circ \sin 30^\circ - \tan 45^\circ + 2\cot 45^\circ$$

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

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

4-

$$-\sin 30^\circ \cos 60^\circ + \cos 30^\circ \sin 60^\circ = \sin^2\theta$$

$$-\frac{1}{2}\cdot\frac{1}{2} = -\frac{1}{4} \qquad \frac{\sqrt{3}}{2}\cdot\frac{\sqrt{3}}{2} = \frac{3}{4}$$

$$\Rightarrow -\frac{1}{4} + \frac{3}{4} = \frac{2}{4} = \left(\frac{1}{2}\right) = \sin^2\theta$$

$$\tan\theta = \frac{\sin}{\cos} = \frac{\pm\frac{\sqrt{2}}{2}}{\pm\frac{\sqrt{2}}{2}} = \pm 1$$

$$\sin 45 = \left(\pm\frac{\sqrt{2}}{2}\right)^2 \Rightarrow \frac{2}{4}$$

۱۳۵

Arman

Subject:

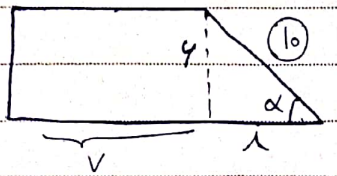
Year: Month: Day: page: ( )

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

$\theta = 30^\circ \Rightarrow \frac{30}{180}\pi\,\text{Rad} = \frac{30\pi}{180}\,\text{Rad} = \frac{1}{6}\pi$

۶- $\frac{\sin}{\cos}$ ، $\sin = 5\cos \Rightarrow \frac{15\cos-\cos}{5\cos-4\cos} = \frac{14\cos}{\cos} = 14$

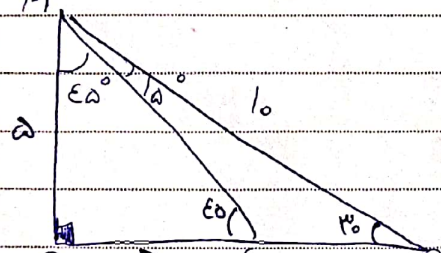
۷- $\sin\alpha = \frac{4}{5}$ مثلث زیر؟



$\Rightarrow 4^2 + x^2 = 10^2 \Rightarrow x^2 = 84 \Rightarrow x = 2\sqrt{21}$

$\frac{7+15}{2}\times 4 = 44$

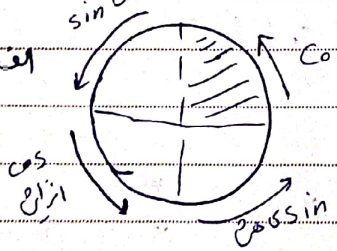
۸-



$DC = 5\sqrt{3}-5 \Rightarrow 5(\sqrt{3}-1)$

$\frac{\sqrt{3}}{2}\times 10^5 = 5\sqrt{3}$

۹-



۱۰- $\tan m = \frac{1}{3}$ $\quad 1+\tan^2 m = \frac{1}{\cos^2 m}$ ، $\frac{9}{9}+\frac{1}{9}$ ، $\frac{10}{9}$ ، $\frac{1}{\cos^2}$

$\sin^2+\cos^2 = 1$ $\quad \cos^2 = \frac{9}{10}$

$\sin^2+\frac{9}{10} = \frac{10}{10}$ $\quad \sin^2 = \frac{1}{10} \Rightarrow \sin = \frac{1}{\sqrt{10}}\,\frac{\sqrt{10}}{10}$

Arman