۱- سیدعلی ...

١٩,۵

(٢)

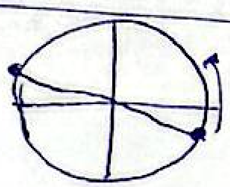
$\cot = \frac{\cos}{|\sin|}$, $\frac{1}{|\cos|} - \frac{\sin}{\cos} = \frac{1-\sin}{|\cos|} \Rightarrow \cos = |\cos| \Rightarrow \cos +$

$\frac{\cos}{\sin} = \frac{\cos}{|\sin|} \Rightarrow \sin = |\sin| \Rightarrow \sin +$

$\sin +$, $\cos + \Rightarrow$ در ناحیه اول

٢- (٢)

$-\frac{\pi}{6} < 2\alpha < \frac{5\pi}{6}$



$\Rightarrow -\frac{1}{2} < \sin 2\alpha \le 1$

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

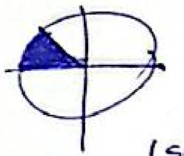
٣- (١,٧۵)

$\frac{1}{\sin\cos} = -3 \Rightarrow -\frac{1}{3} = \sin\cos$

$\sin^3 + \cos^3 = (\sin+\cos)(\sin^2+\cos^2 - \sin\cos)$

$(\sin+\cos)(1+\frac{1}{3})$

$\frac{3\pi}{4} < \alpha < \pi$



$(\sin+\cos)^2 = 1-\frac{2}{3} \Rightarrow (\sin+\cos)^2 = \frac{1}{3} \Rightarrow |\sin+\cos| = \sqrt{\frac{1}{3}} = \frac{1}{\sqrt{3}}$

با توجه به شکل $\sin+\cos = -\frac{1}{\sqrt{3}}$

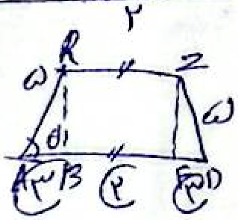
خواسته سوال

↓

$\frac{1}{\sin^3 x + \cos^3 x} = -\frac{3}{4}\sqrt{3}$

$\sin^3 + \cos^3 = -\frac{1}{\sqrt{3}} \times \frac{4}{3} = -\frac{4}{3\sqrt{3}}$

۴- (٢)



$5 \times \frac{6}{10} = AB = FD = 3$

$\text{مساحت} = \frac{\text{ارتفاع} \times \text{مجموع دو قاعده}}{2} \Rightarrow \frac{10\times 4}{2} = 20$

$\Rightarrow AD = 8$

$HB = \frac{8}{10} \times 5 = 4$ ارتفاع

۵- (٢)

$(-\cot 15 \times \tan 15) - (\sin 105 \times -\sin 15) = \sin^2 15 - 1 = 1 - \cos^2 15 - 1 = -\cos^2 15$

$-1 + \sin^2 15$

$k = -1$

۶- (٢)

$\sqrt{2} \times -\frac{\sqrt{2}}{2} \times -\cos 27 \quad \cancel{-\sqrt{2}} \times \frac{\sqrt{2}}{2} \times -\cos 27$

$\frac{3}{2} \times \cos 27 + \cos(27) = \frac{5}{2}\cos 27 \Rightarrow$ ٢,۵ برابر $\cos 27$

سیدعلی خان ۱۲۱

۷-

$6x=\frac{\pi}{6}$

$12x=\frac{\pi}{3}$

$18x=\frac{2\pi}{3}$

$\cancel{16}\cos^2(3x)\times\frac{3}{\cancel{4}}\times\frac{1}{\cancel{4}}\times\frac{1}{4}=\frac{3}{4}\cos^2\left(\frac{\pi}{12}\right)=$

$\cos^2\alpha=\frac{1+\cos2\alpha}{2}=\frac{1+\cos\frac{\pi}{6}}{2}=\frac{\frac{\sqrt3}{2}+1}{2}=$

$\frac{3}{4}\times\frac{(2+\sqrt3)}{4}=\frac{6+3\sqrt3}{16}$ $\frac{3+\sqrt3}{4}$

۲

۸-

$4+4\sin=1-\sin\Rightarrow5\sin=-3\Rightarrow\sin=-\frac{3}{5}\Rightarrow\cos=-\frac{4}{5}$

$\tan\frac{\alpha}{2}=\frac{\sin\alpha}{1+\cos\alpha}$ $\frac{-\frac{3}{5}}{1-\frac{4}{5}}=\frac{-\frac{3}{5}}{\frac{1}{5}}=-3$

۲

۹-

$\frac{\sin\alpha}{1+\cos\alpha}=\tan\frac{\alpha}{2}$ $\frac{1+\cos\alpha}{\sin\alpha}=\cot\frac{\alpha}{2}$

$\frac{1-\cos}{\sin\alpha}=\tan\frac{\alpha}{2}\Rightarrow\frac{\sin}{1-\cos}=\cot\frac{\alpha}{2}\Rightarrow2\cot\frac{\alpha}{2}\Rightarrow k=2$

۲

۱۰-

(در ناحیه دوم) $\Rightarrow$ $\cos -$, $\sin +$

$\sin\alpha=\frac{\sqrt2}{10}$ $(+)$ $\Rightarrow\cos=(-)\frac{\sqrt{98}}{10}$

۱,۷۵

$\cos\left(\frac{3\pi}{4}+\alpha\right)=\cos\alpha\cos\frac{3\pi}{4}-\sin\alpha\sin\frac{3\pi}{4}=$

$-\frac{\sqrt2}{2}\times\cos\alpha-\sin\alpha\times\frac{\sqrt2}{2}$

$-\frac{\sqrt{98}}{10}$ $7\sqrt2$

$-\frac{\sqrt2}{10}\times\frac{\sqrt2}{2}=\frac{\sqrt{98}\times\sqrt2}{20}-\frac{2}{20}=\frac{\sqrt{196}-2}{20}=\frac{14-2}{20}$

$\frac{14}{20}-\frac{2}{20}=\boxed{0.6}$