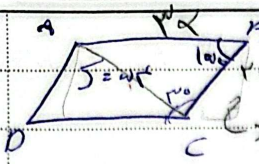
پاسخ تشریحی سوالات سری بیست و ششم

(۲۰)

سوال ۱:



$\frac{AB}{BC} = \frac{۳}{۱}$

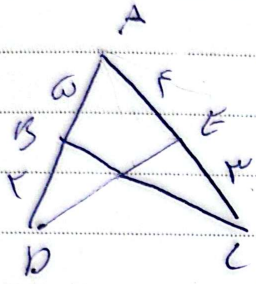
$S_{ABCD} = S_{ABC} + S_{ADC} \rightarrow \frac{۲}{۲} \times ۱ \times ۳\alpha \times ۲\alpha \times \frac{۱}{۲} = ۶۳ \rightarrow ۳\alpha^۲ = ۶۳$

$\alpha^۲ = ۱۸ \rightarrow \alpha = \sqrt{۱۸}$

$P = ۲ \times ۳\sqrt{۱۸} + ۲ \times ۲\sqrt{۱۸} = ۱۰\sqrt{۱۸} = ۳۰\sqrt{۲}$

(۵)

سوال ۲:



$S_{ABC} - S_{ADE} = ۱۱۷ \quad \tan\hat{A} = ? \quad \hat{A} < ۹۰$

$S_{ABC} = \frac{۱}{۲}(\sin\hat{A} \times ۹ \times ۷) \quad S_{ADE} = \frac{۱}{۲}(\sin\hat{A} \times ۷ \times ۴)$

$\frac{S_{ABC}}{S_{ADE}} = \frac{n+۱۱۷}{n} = \frac{۹}{۴} \rightarrow ۴n + ۷ = ۹n - ۱۱۷ = ۷$

$S_{ADE} = ۷ = \frac{۱}{۲} \times \sin A \times ۷ \times ۴ \rightarrow \sin\hat{A} = \frac{۱}{۲} \rightarrow \hat{A} = ۳۰^\circ \rightarrow \tan\hat{A} = \frac{\sqrt{۳}}{۳}$

(۵)

سوال ۳:

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{۱}{\cot\alpha}$ و $\frac{۱}{\sqrt{\cos^۲\alpha}} - \tan\alpha = \frac{۱+\sin\alpha}{|\cos^۳\alpha|}$

$\frac{|\sin\alpha|}{\cos\alpha} = -\frac{\sin\alpha}{\cos\alpha}$

$|\sin\alpha| = -\sin\alpha$

$\sin\alpha < ۰$

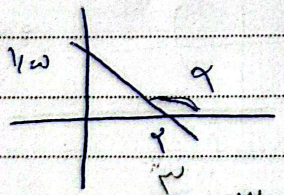
$\frac{۱}{|\cos\alpha|} - \tan\alpha = \frac{۱+\sin\alpha}{|\cos\alpha|}$

$-\frac{\sin\alpha}{\cos\alpha} = \frac{\sin\alpha}{|\cos\alpha|} \rightarrow \cos\alpha < ۰$

$\sin\alpha < ۰$ و $\cos\alpha < ۰ \rightarrow$ ناحیه سوم $\rightarrow \alpha$

(۵)

سوال ۴:



$\tan(\frac{\pi}{۲} - \alpha) = ?$

$\frac{۱۰-۰}{۰-۲} = \frac{۵}{-۲} = -\frac{۳}{۴}$

$\tan\alpha = -\frac{۳}{۴}$

$\cot\alpha = \tan(\frac{\pi}{۲} - \alpha)$

$-\frac{۳}{۴}$

(۵)

سوال ۵:

$\frac{۳\cos(۲۷۰-۲۲) - ۲\sin(۱۸۰-۲۲)}{\sin(۲۰۳) - \cos(۲۹۲)} = \frac{۳\cos(\frac{۳\pi}{۲} - ۲۲) - ۲\sin(\pi - ۲۲)}{\sin(\pi + ۲۲) - \cos(\frac{۳\pi}{۲} + ۲۲)}$

$\frac{-۳\sin۲۲ - ۲\sin۲۲}{-\sin۲۲ - \sin۲۲} = \frac{-۵\sin۲۲}{-۲\sin۲۲} = \frac{۵}{۲}$

(۵)

Arman

page: ( )

Subject:

Year: Month: Day:

سوال ۶:

$\cos\alpha = \frac{2}{3}$ و α در ربع چهارم

$\frac{\sin(\frac{\pi}{2}+\alpha) - \sin(\alpha-\pi)}{|\tan^2\alpha - 1|}$

$\tan^2\alpha + 1 = \frac{1}{\cos^2\alpha} \rightsquigarrow \tan^2\alpha = \frac{1}{\cos^2\alpha} - 1$

$\frac{1}{\frac{4}{9}} - 1 = \frac{9}{4} - 1 = \frac{5}{4}$

$\frac{\cos\alpha - (\sin\alpha)}{\frac{1}{2}} \rightsquigarrow \frac{\frac{2}{3} + \frac{\sqrt{5}}{3}}{\frac{1}{2}} = \frac{2(2+\sqrt{5})}{3}$

$\cos^2\alpha + \sin^2\alpha = 1$

$\frac{4}{9} + m = \frac{9}{9} \rightsquigarrow \sin^2\alpha = \frac{5}{9}$

$\sin\alpha = -\frac{\sqrt{5}}{3}$ (ربع چهارم)

سوال ۷:

$\sin\alpha = 2\cos\alpha$ و α ربع اول

$\sin^2\alpha = 4\cos^2\alpha$ (۱)

$\sin^2\alpha + \cos^2\alpha = 1$

$5\cos^2\alpha = 1 \rightsquigarrow \cos^2\alpha = \frac{1}{5} \rightsquigarrow \cos\alpha = \frac{1}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{\sqrt{5}}{5}$ ربع اول $\rightsquigarrow \cos\alpha = \frac{\sqrt{5}}{5}$

سوال ۸:

$2mn + (m^2-1)y = 3$ $\quad \tan 90^\circ = \sqrt{3}$

$y = \frac{3}{m^2-1} - \frac{2m}{m^2-1}$

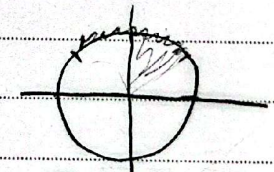
$-\frac{2m}{m^2-1} = \sqrt{3} \rightsquigarrow \sqrt{3}m^2 - \sqrt{3} = -2m$

$\sqrt{3}m^2 + 2m - \sqrt{3} = 0$

$\rightsquigarrow |m_2 - m_1| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4+12}}{\sqrt{3}} = \frac{\sqrt{16}}{\sqrt{3}} = \frac{4}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

سوال ۹:

$\tan(\frac{\pi}{4} - n) = \frac{1-m}{2+m}$ $\quad -\frac{\pi}{2} < n < \frac{\pi}{2}$



$-\frac{\pi}{2} < n < \frac{\pi}{2} \rightsquigarrow -\frac{\pi}{2} < -n < \frac{\pi}{2} \rightsquigarrow 0 < -n + \frac{\pi}{2} < \pi$

$0 < \tan(\frac{\pi}{4} - n)$

$0 < \frac{1-m}{2+m}$ $\quad -2 \quad -1 \quad 1$ $\quad - \; + \; -$

$\rightsquigarrow -2 < m < 1$

سوال ۱۰:

$\tan(200)\cos(210) + \tan(240)\sin(840) = ?$

$\tan(270-60)\cos(180+30) + \tan(\frac{9\pi}{2} + 30)\sin(4\pi + \frac{\pi}{2} + 30)$

$-\tan(60) \times -\cos(30) + -\cot(30) \times \cos(30)$

$-\sqrt{3} \times -\frac{\sqrt{3}}{2} + -\sqrt{3} \times \frac{\sqrt{3}}{2} = \frac{3}{2} + -\frac{3}{2} = 0$

Arman