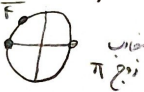


نام و نام خانوادگی شماره کلاس پاسخنامه تشریحی تکلیف شماره ۱۸۰

۱) $\tan \frac{11\pi}{5} + \sin \frac{10\pi}{5} \cos \frac{13\pi}{5} \rightarrow \frac{\tan(2\pi + \frac{3\pi}{5}) + \sin(2\pi + \frac{2\pi}{5}) \cos(2\pi + \frac{3\pi}{5})}{\tan(\frac{3\pi}{5}) = -1} = -\frac{1}{5}$

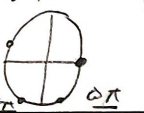
$\frac{-\sqrt{5}}{5} \times \frac{-\sqrt{5}}{5} = \frac{5}{5} = 1$



ب) $\tan \frac{14\pi}{5} \sin \frac{11\pi}{5} + \cos \frac{10\pi}{5} \rightarrow \frac{\tan(2\pi + \frac{4\pi}{5}) \sin(2\pi + \frac{3\pi}{5}) + \cos(2\pi + \frac{2\pi}{5})}{\tan(\frac{4\pi}{5}) = \frac{1}{-1/5} = -5} = 0$

$\frac{1}{-5} \times \frac{-\sqrt{5}}{5} = \frac{1}{5}$

$\frac{1}{5} - \frac{1}{5} = 0$



$$\frac{5 \cos \alpha - \sin \alpha}{\cos \alpha + \sin \alpha} \div \sin \alpha \rightarrow \frac{5 \cot \alpha - 1}{\cot \alpha + 1} = \frac{5 \times 5 - 1}{5 + 1} = \frac{11}{6}$$

$$\sin \alpha = 5 \cos \alpha$$

$$\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow (5 \cos \alpha)^2 + \cos^2 \alpha = 1 \Rightarrow 25 \cos^2 \alpha + \cos^2 \alpha = 1$$

$$26 \cos^2 \alpha = 1$$

$$\cos^2 \alpha = \frac{1}{26}$$

$$\cos \alpha = \pm \sqrt{\frac{1}{26}} \Rightarrow \cos \alpha = -\frac{1}{\sqrt{26}} = -\frac{\sqrt{26}}{26}$$

پس $\cos \alpha = -\frac{\sqrt{26}}{26}$

الف) $\sin^2 \alpha + \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha = 1 - \sin^2 \alpha \Rightarrow 1 - \frac{9}{100} = \frac{91}{100} = \cos^2 \alpha$

$\cos(\frac{11\pi}{5} + \alpha) \Rightarrow \cos \frac{11\pi}{5} \times \frac{-\sqrt{5}}{10} - \sin \frac{11\pi}{5} \times \frac{\sqrt{5}}{10} \Rightarrow \frac{-\sqrt{5}}{10} \times \frac{-\sqrt{5}}{10} - \frac{1}{10} \times \frac{\sqrt{5}}{10} = \frac{5}{100} - \frac{\sqrt{5}}{100} = \frac{5 - \sqrt{5}}{100}$

$\frac{11\pi}{5} \rightarrow 132^\circ$

ب) $\tan \alpha = \frac{1}{5} \rightarrow \sin \alpha = \frac{1}{\sqrt{26}} \Rightarrow \cos \alpha = \frac{5}{\sqrt{26}}$

$\sin(\frac{13\pi}{5} + \alpha) \rightarrow \sin \frac{13\pi}{5} \times \frac{1}{\sqrt{26}} + \cos \frac{13\pi}{5} \times \frac{1}{\sqrt{26}} = \frac{-\sqrt{5}}{5} \times \frac{1}{\sqrt{26}} + \frac{1}{5} \times \frac{1}{\sqrt{26}} = \frac{-\sqrt{5} + 1}{5\sqrt{26}} = \frac{1 - \sqrt{5}}{5\sqrt{26}}$

$\frac{13\pi}{5} \rightarrow 156^\circ$

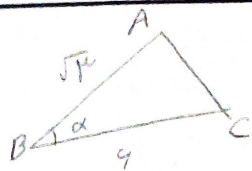
$$5 \sin^2 \alpha + \cos^2 \alpha = \frac{5}{10} \rightarrow \sin^2 \alpha + \sin^2 \alpha + \cos^2 \alpha = \frac{5}{10}$$

$$\tan^2 \alpha = \frac{\sin^2 \alpha}{\cos^2 \alpha} = \frac{\frac{1}{26}}{\frac{25}{26}} = \frac{1}{25}$$

$$\sin^2 \alpha = \frac{1}{26} - 1 = -\frac{1}{26}$$

$$\sin \alpha = \pm \sqrt{\frac{1}{26}} \rightarrow \frac{1}{10} + \cos^2 \alpha = \frac{5}{10}$$

$$\cos^2 \alpha = \frac{4}{10}$$



$$S_{ABC} = \frac{1}{2} \times \sqrt{10} \times 4 \times \sin \alpha = 8$$

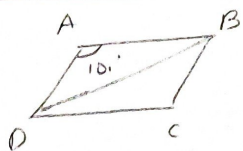
$$\sin \alpha = \frac{4}{\sqrt{10}}$$

$$\frac{\sin \alpha}{\cos \alpha} = \frac{4}{3} = \frac{4}{3}$$

$$\sin \alpha = \frac{4}{\sqrt{10}} \rightarrow \frac{\sqrt{10}}{4}$$

$\angle C \Rightarrow 40^\circ$
 $\angle C \Rightarrow 140^\circ$

6



$$S_{\square} \Rightarrow \frac{1}{2} \times AB \times AD \times \sin 10^\circ \Rightarrow \frac{1}{2} \times AD \times AD \times \frac{1}{4} = 10$$

$$\frac{AD}{AB} = \frac{1}{4} \rightarrow AB = \frac{4AD}{1}$$

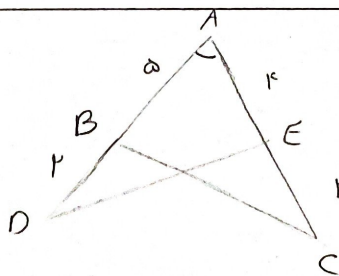
$$AD^2 = 40$$

$$AD = \sqrt{40} = 2\sqrt{10}$$

$$AD = \sqrt{40} = 2\sqrt{10}$$

$$AB = 4\sqrt{10}$$

7



$$S_{ABC} \Rightarrow \frac{1}{2} \times 10 \times 10 \times \sin A$$

$$S_{ADE} \Rightarrow \frac{1}{2} \times 10 \times 10 \times \sin A$$

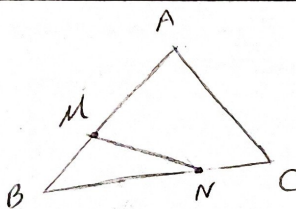
$$\Rightarrow S_{ABC} - S_{ADE} = \sin A (100 - 100) = 100$$

$$\sin A \Rightarrow \frac{100}{100} = \frac{1}{1} \rightarrow \hat{A} = 90^\circ$$

$$\tan \hat{A} = \frac{\sin A}{\cos A} = \frac{1}{0} = \left| \frac{1}{0} \right|$$

$$\hat{A} = 90^\circ$$

8



$$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \times AB \times BC \times \sin B}{\frac{1}{2} \times BM \times BN \times \sin B} \Rightarrow \frac{(BM+MA)(BN+NC)}{BM \times BN} \Rightarrow$$

$$BM = NC$$

$$NC = \frac{BM}{1}$$

$$\frac{BM}{1} = \frac{MA}{1} \Rightarrow \frac{BM}{MA} = 1$$

$$\frac{(BM+MA)(\frac{BM}{1})}{BM \times BN} \Rightarrow \frac{BM + MA}{1} = 1$$

$$9BM = MB + MA$$

$$\leftarrow 8BM = MA$$

$$9$$

$$\frac{1}{\sqrt{\cos \alpha}} - \tan \alpha = \frac{1 + \sin \alpha}{\cos \alpha} \rightarrow \left| \frac{1}{\cos \alpha} \right| - \frac{\sin \alpha}{\cos \alpha} = \frac{1 + \sin \alpha}{|\cos \alpha|} \Rightarrow \frac{1 - \sin \alpha}{\cos \alpha} = \frac{1 + \sin \alpha}{|\cos \alpha|}$$

$$\frac{|\sin \alpha|}{\cos \alpha} = -\frac{1}{\cot \alpha} \rightarrow \frac{|\sin \alpha|}{\cos \alpha} = -\frac{\sin \alpha}{\cos \alpha} \Rightarrow -\sin \alpha \cos \alpha = |\sin \alpha| \cos \alpha$$

استنتج

$$\boxed{1}$$

$$\cos \alpha \neq 0 \quad -\sin \alpha = |\sin \alpha|$$

$$\Rightarrow \sin \alpha \leq 0$$

10