نام و نام خانوادگی ....آرشیدا نواب دره.... پاسخنامه تشریحی تکلیف شماره .... کلاس .....دهم ۱۳.......

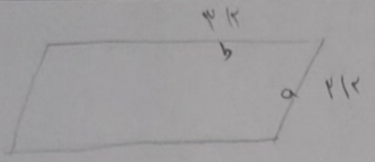
۱۷٫۵

۱	الف) $\tan\frac{11\pi}{4} + \sin\frac{15\pi}{4}\cos\frac{13\pi}{4} \Rightarrow -1 + \frac{\sqrt{2}}{2}\left(-\frac{\sqrt{2}}{2}\right) = -1 + \frac{2}{4} = \frac{-2}{4} = \frac{-1}{2}$ $2\pi + \frac{7\pi}{4}$ ، $2\pi + \frac{5\pi}{4}$ ب) $\tan\frac{17\pi}{6}\sin\frac{11\pi}{3} + \cos\frac{10\pi}{3} = \frac{-\sqrt{3}}{3} \times \frac{-\sqrt{3}}{2} + \frac{1}{2} = 0$ $2\pi + \frac{5\pi}{6}$ ، $3\pi + \frac{2\pi}{3}$ ، $3\pi + \frac{\pi}{3}$ ۲
۲	$\cot x = 4 \Rightarrow \frac{\cos x}{\sin x} = 4 \Rightarrow \cos x = 4\sin x$ $\frac{12\sin x - \sin x}{4\sin x + \sin x} = \frac{11\sin x}{5\sin x} = \frac{11}{5}$ ۲
۳	$\sin\alpha = 2\cos\alpha$ $\quad \alpha \mid$ ربع سوم $\frac{\sin\alpha}{\cos\alpha} = 2$ $\cos^2\alpha = \frac{1}{1+\tan^2\alpha}$ ($1+4$) $\rightarrow \cos\alpha = \mp\frac{1}{\sqrt{5}} \xRightarrow{\text{ربع سوم}} \frac{-1}{\sqrt{5}}$ ۲
۴	الف) $\cos\left(\frac{11\pi}{4} + \alpha\right) = -\sin\alpha = \frac{-\sqrt{2}}{10}$ ۱٫۷۵ ب) $\sin\left(\frac{13\pi}{4} + \alpha\right) = -\cos\alpha \Rightarrow \frac{-7\sqrt{2}}{10}$ $\tan\alpha = \frac{1}{7} \Rightarrow 1 + \tan^2\alpha = \frac{1}{\cos^2\alpha}$ ($\frac{1}{49}$) $\Rightarrow \cos\alpha = \frac{7\sqrt{2}}{10}$
۵	$2\sin^2 x + \cos^2 x = \frac{4}{3}$ ($\cos^2 x = 1 - \sin^2 x$) $\Rightarrow \sin^2 x + 1 = \frac{4}{3} \rightarrow \sin^2 x = \frac{1}{3}$ ، $\cos^2 x = 1 - \sin^2 x = 1 - \frac{1}{3} = \frac{2}{3}$ $\tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$ ۲

$S=\frac{1}{2}ah\sin\alpha \Rightarrow \frac{1}{2}(\cancel{2})(\sqrt{3})\sin\alpha = 4.5 \to 3\sqrt{3}\sin\alpha = 4.5 \Rightarrow \sin\alpha = \frac{4.5}{3\sqrt{3}}\times\frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{2}$ ۶

$\to \sin\alpha$: $\sin 60^\circ$ ت ، $\sin 120^\circ$ ب $\Rightarrow \frac{120}{60} = 2$

۲



$S = ab\sin\alpha \Rightarrow 54 = (3k)(2k)\sin 150 \quad (\frac{1}{2})$

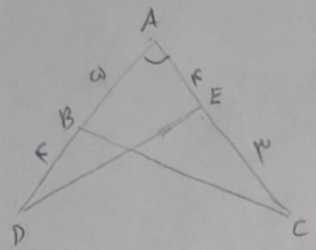
$\Rightarrow 54 = 6k^2(\frac{1}{2}) \to 54 = 3k^2 \to k^2 = 18 \to k = 3\sqrt{2}$ ★ ۷

★ $\to 2k = 2(3\sqrt{2}) = 6\sqrt{2}$

$3k = 3(3\sqrt{2}) = 9\sqrt{2}$

$\Rightarrow P = 2(a+b) = 2(6\sqrt{2} + 9\sqrt{2}) = 30\sqrt{2}$

۲



$\hat{ABC} - \hat{ADE} = 1.75 \quad , \tan\hat{A} = ?$

$S_{ABC} = \frac{1}{2}(5)(7)\sin A \to S_{ABC} = \frac{35}{2}\sin A$ کم می‌کنیم $\frac{35}{2}\sin A - 14\sin A = \frac{7}{2}\sin A$

۱,۵

$S_{ADE} = \frac{1}{2}(7)(4)\sin A = 14\sin A = S_{\hat{ADE}}$ ۸

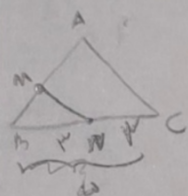
$\frac{7}{2}\sin A = 1.75$

$\sin A = \frac{1.75}{\frac{7}{2}} = 5$

$\cos^2 A = 1 - \sin^2 A = -\frac{24}{25} \to -\sqrt{24}$

$\tan A = \frac{5}{-\sqrt{24}} \times \frac{\sqrt{24}}{\sqrt{24}} = \frac{-5\sqrt{24}}{24}$

$2BN = 3NC \to \frac{BN}{NC} = \frac{3}{2} \Rightarrow BN = 3x,\ NC = 2x,\ BC = 5x$



$S_{ABC} = \frac{1}{2}\times 5x\times h \Rightarrow$ چون ارتفاع و ... دو مثلث مشترک داریم

$\hat{ABN} \ldots \hat{ABC} = \ldots$

$\to \frac{S_{ABN}}{S_{ABC}} \Rightarrow \frac{BN}{BC}$ ۲ ۹

$S_{ABC} = 4S_{BMN} \quad \frac{S_{BMN}}{S_{ABC}} = \frac{1}{4}$

$\to \frac{BN}{BC}\times\frac{BM}{BA} = \frac{1}{4} \quad \frac{BN}{BC} = \frac{3}{5} \Rightarrow \frac{3}{5}\cdot\frac{BM}{BA} = \frac{1}{4} \Rightarrow \frac{BM}{BA} = \frac{1.4}{4.5} \Rightarrow \frac{1}{4}\times\frac{5}{3} = \frac{5}{9} \Rightarrow BM = 5$

$\frac{BM}{AM} = \frac{5}{4}$

$AM = BA - BM = 9 - 5 = 4$

$\frac{|\sin\alpha|}{\cos\alpha} = \frac{1}{\cos\alpha} \to \frac{|\sin\alpha|}{\cos\alpha} = \tan\alpha \to \frac{|\sin\alpha|}{\cos\alpha} = \frac{\sin\alpha}{\cos\alpha} \Rightarrow |\sin\alpha|\cancel{\cos\alpha} = \sin\alpha\cancel{\cos\alpha}$

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

ناحیه ۱ یا ۲ $\Leftarrow \sin\alpha > 0$

۱,۲۵ ۱۰

$\frac{1}{\sqrt{\cos^2\alpha}} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|} : \frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$

$\cos\alpha > 0: 1 - \sin\alpha = 1 + \sin\alpha \Rightarrow \ldots$

$\cos\alpha < 0: \frac{1+\sin\alpha}{|\cos\alpha|} = \frac{1+\sin\alpha}{-\cos\alpha}$

در ناحیه ۲

سوال ۴ ط

الف)

$$\cos^2\alpha = 1 - \sin^2\alpha \rightarrow \cos\alpha = 1 - \left(\frac{\sqrt{2}}{10}\right)^2 = 1 - \frac{2}{100} = \frac{98}{100} \xrightarrow[\cos\alpha<0]{\alpha\ \text{ناحیه}\ 2} \cos\alpha = -\frac{7\sqrt{2}}{2}$$

$$\cos\left(\frac{11\pi}{4} + \alpha\right) = \cos\left(3\pi - \frac{\pi}{4} + \alpha\right) = -\cos\left(\alpha - \frac{\pi}{4}\right)$$

$$-\left(\frac{\sqrt{2}}{2} \times \cos\alpha + \frac{\sqrt{2}}{2}\sin\alpha\right) = -\frac{\sqrt{2}}{2}\left(-\frac{7\sqrt{2}}{10} + \frac{\sqrt{2}}{10}\right) = -\frac{1}{\cancel{\sqrt{2}}} \times -\frac{6\cancel{\sqrt{2}}}{10} = \boxed{\frac{3}{5}}$$

ب)

$$\tan\alpha = \frac{1}{7} \rightarrow 1 + \tan^2\alpha = \frac{1}{\cos^2\alpha} \rightarrow 1 + \frac{1}{49} = \frac{1}{\cos^2\alpha}$$

$$\cos^2\alpha = \frac{49}{50} \xrightarrow[\cos\alpha>0]{\alpha\ \text{ناحیه اول}} \cos\alpha = \frac{7}{5\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{7\sqrt{2}}{10}$$

$$\sin^2\alpha = 1 - \frac{49}{50} = \frac{1}{50} \xrightarrow[\sin\alpha>0]{\alpha\ \text{ناحیه اول}} \sin\alpha = \frac{1}{5\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{10}$$

$$\sin\left(3\pi + \frac{\pi}{4} + \alpha\right) = -\sin\left(\frac{\pi}{4} + \alpha\right) = -\left(\frac{\sqrt{2}}{2}\cos\alpha + \frac{\sqrt{2}}{2}\sin\alpha\right)$$

$$-\frac{\sqrt{2}}{2}\left(\frac{7\sqrt{2}}{10} + \frac{\sqrt{2}}{10}\right) = \frac{-1}{\cancel{\sqrt{2}}} \times \frac{8\cancel{\sqrt{2}}}{10} = \boxed{-\frac{4}{5}}$$

۹

$$S_{ABC} = \frac{1}{2} \times 7 \times 5 \times \sin\hat{A}$$

$$S_{ADE} = \frac{1}{2} \times 7 \times 4 \times \sin\hat{A}$$

$$\xrightarrow{\text{کم}} \cancel{\frac{1}{2}} \times \cancel{7} \times \sin\hat{A}\,(5 - 4) = \frac{\cancel{7}}{\cancel{4}}\ 2$$

$$\hat{}\quad 1 \rightarrow \hat{A} = \frac{\pi}{} \rightarrow \tan\frac{\pi}{6} = \boxed{\frac{\sqrt{3}}{3}}$$

۱۰

$$\frac{}{\sqrt{\cancel{\cos^2\alpha}}\ |\cos\alpha|} - \frac{\sin\alpha}{\cos\alpha} = \frac{1 + \sin\alpha}{|\cos\alpha|} \rightarrow \frac{1}{|\cos\alpha|} - \frac{1 - \sin\alpha}{|\cos\alpha|} = \frac{\sin\alpha}{\cos\alpha}$$

$$\frac{-\sin\alpha}{|\cos\alpha|} = \frac{\sin\alpha}{\cos\alpha} \rightarrow |\cos\alpha| = -\cos\alpha \rightarrow \boxed{\cos\alpha < 0}$$

$$\frac{|\sin\alpha|}{\cos\alpha} = -\tan\alpha \rightarrow |\sin\alpha| = -\sin\alpha \rightarrow \boxed{\sin\alpha < 0}$$

ناحیه سوم