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نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۱۸ کلاس دهم B

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الف) $\tan\frac{11\pi}{4} + \sin\frac{10\pi}{4} + \cos\frac{12\pi}{4} = -1-\sqrt{2}$

$-\tan\frac{\pi}{4} - \sin\frac{\pi}{4} - \cos\frac{\pi}{4} =$

$-1-\frac{\sqrt{2}}{2}-\frac{\sqrt{2}}{2} = -\frac{1}{2}$

ب) $\tan\frac{17\pi}{6}\sin\frac{11\pi}{12} + \cos\frac{10\pi}{12}\frac{\sqrt{2}}{2} - \frac{\pi}{6} = -\frac{2-\sqrt{2}}{6}$

$-\tan\frac{\pi}{6} - \sin\frac{\pi}{12} - \cos\frac{\pi}{12} =$

$-\frac{\sqrt{3}}{3}\times -\frac{\sqrt{3}}{2} + (-\frac{1}{2}) = 0$

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$\frac{2\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha} \xrightarrow{\div\sin} \frac{2\cot - 1}{\cot + 1} = \frac{12}{4+1} = \frac{11}{5} = 2.2$ ✓

$\cot\alpha = 4$

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$\sin\alpha = 2\cos\alpha$

$\sin\alpha > 0, \cos\alpha > 0$

$\sin^2\alpha + \cos^2\alpha = 1 \Rightarrow 4\cos^2\alpha + \cos^2\alpha = 1 \Rightarrow 5\cos^2\alpha \Rightarrow \cos^2\alpha = \frac{1}{5}$

$\cos\alpha = \pm\frac{1}{\sqrt{5}}$ ← چون کسینوس کمان در ناحیه دوم < 0 است پس قابل قبول نیست

$\cos\alpha = -\frac{\sqrt{5}}{5}$ ✓

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$\sin\alpha = \frac{\sqrt{2}}{10}$ $\cos\left(\frac{17\pi}{4}+\alpha\right) = ?$

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

$\cos^2\alpha = \frac{98}{100}$

$\cos\alpha = \pm\frac{\sqrt{98}}{10}$ (غ ق د)

$\cos(\alpha\pm\beta) = \cos\alpha\cos\beta \mp \sin\alpha\sin\beta = \left(\frac{\sqrt{98}}{10}\right)\left(-\frac{\sqrt{2}}{2}\right) - \left(\frac{\sqrt{2}}{10}\right)\left(\frac{\sqrt{2}}{2}\right) = \frac{-8}{10}$

$\sin(\alpha\pm\beta) = \sin\alpha\cos\beta \pm \cos\alpha\sin\beta = \left(\frac{\sqrt{2}}{10}\right)\left(-\frac{\sqrt{2}}{2}\right) + \left(\frac{\sqrt{98}}{10}\right)\left(-\frac{\sqrt{2}}{2}\right) = \frac{-8}{10}$

$\tan\alpha = \frac{1}{7}$ $\sin\left(\frac{17\pi}{4}+\alpha\right) = ?$ $\frac{\sin\alpha}{\cos\alpha} = \frac{1}{7}$ $\sin\alpha = \cos\alpha$ $\sin^2\alpha + \cos^2\alpha = 1$ $\sin^2\alpha + 49\sin^2\alpha = 1$

$\sin^2\alpha = \frac{1}{50}$ $\sin\alpha = \pm\frac{1}{5\sqrt{2}} = \pm\frac{\sqrt{2}}{10}$ (غ ق د)

$\cos\alpha = \frac{7}{5\sqrt{2}} = \frac{7\sqrt{2}}{10}$

$\sin\left(\frac{17\pi}{4}+\alpha\right) = \sin\left(\frac{\pi}{4}+\alpha\right) = \sin\frac{\pi}{4}\cos\alpha + \cos\frac{\pi}{4}\sin\alpha = \frac{\sqrt{2}}{2}\left(\frac{7\sqrt{2}}{10}\right) + \frac{\sqrt{2}}{2}\left(\frac{\sqrt{2}}{10}\right) = \frac{8}{10}$

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$2\sin^2 + \cos^2 = \frac{4}{3}$ $\tan^2 = ?$

$\sin^2 + \sin^2 + \cos^2 = \frac{4}{3} \Rightarrow \sin^2 = \frac{1}{3}$ $\cos^2 = \frac{2}{3}$

$\tan^2 = \frac{\sin^2}{\cos^2} = \frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$ ✓

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$S_{ABC}^{\Delta} = \frac{1}{2} ab \sin\alpha = \frac{6\times\sqrt{2}\times \sin\alpha}{2} = 5/10$

$6, \sqrt{2}$

$3\sqrt{2}\sin\alpha = 5/10$

$\sqrt{2}\sin\alpha = \frac{3}{2}$

$\sin\alpha = \frac{\sqrt{2}}{2}$

$\alpha \begin{cases} 45^\circ \\ 135^\circ \end{cases} \Rightarrow \frac{120}{60} = 2$ ✓

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$S_{ABCD} = \frac{1}{2} ab \sin\alpha = \frac{2x \cdot 2x \times \sin\alpha}{2} = 25 = \frac{4x^2}{2} \Rightarrow 2x^2 \Rightarrow x = 2\sqrt{2}$

($\sin 30^\circ = \frac{1}{2}$)

$P = 2(2x+2x) = 10x = \boxed{20\sqrt{2}}$ ✓

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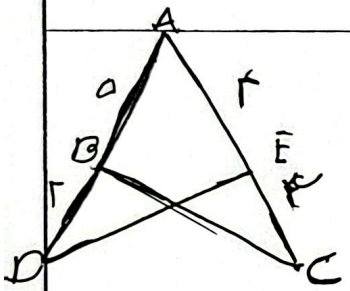

$\Delta S_{ABC, ADE} = 1/6 = \frac{1}{2}\sin\alpha\,(V\times 0 - V\times 5) = 20\sin\alpha = 1/6$

$\sin\alpha = \frac{1}{12}$

$\alpha \Leftarrow \cos\alpha = \frac{\sqrt{3}}{2} \Leftarrow 30^\circ$

$\alpha \Leftarrow \cos\alpha = -\frac{\sqrt{3}}{2} \Leftarrow 150^\circ$

$\tan\alpha = \frac{\sqrt{3}}{3}$

$\tan\alpha = -\frac{\sqrt{3}}{3}$

چون A حاده است قابل قبول نیست

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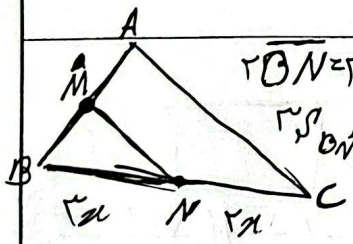

$2\overline{BN} = 3\overline{CN}$

$3S_{BMN} = S_{ABC} = \frac{1}{2}\sin B\ \overline{BC}\cdot\overline{AB} = 3\left(\frac{1}{2}\sin B\ \overline{BN}\cdot\overline{BM}\right)$

$\overline{BC}\cdot\overline{AB} = 3\times\frac{5}{3}\overline{BC}\cdot\overline{BM}$

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$\overline{AB} = \frac{9}{5}\overline{BM}$

$\overline{BM} = \frac{5}{9}\overline{AB}$

$\frac{\overline{BM}}{\overline{AM}} = \frac{\frac{5}{9}\overline{AB}}{\frac{4}{9}\overline{AB}} = \frac{5}{4} = 1/25$ ✓

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$\frac{|\sin\alpha|}{\cos\alpha} = \frac{1}{\cot\alpha}$, $\sqrt{\frac{1}{\cos^2\alpha}} \Rightarrow \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$

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

$\frac{1}{|\cos\alpha|} - \tan\alpha = \frac{1+\sin\alpha}{|\cos\alpha|}$

$\sin\alpha < 0$

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

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کوتاه‌ترین α ها در ناحیه سوم است ✓