۱۴,۵

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

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الف) $\tan(135) + (\sin(135)\cos(60))$

$-1 + \left(\frac{\sqrt{2}}{2} \times \frac{1}{2}\right) = -1 + \frac{1}{4} = -0/75$

ب) $(\tan(120) \times \sin(120)) + \cos 60$

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

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$\frac{\cos x}{\sin x} = 4$

$\cos x = 4\sin x \longrightarrow \frac{12\sin x - \sin x}{4\sin x + \sin x} = \frac{11\sin x}{5\sin x} = \frac{11}{5}$

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

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

$4\cos^2\alpha + \cos^2\alpha = 1$

$5\cos^2\alpha = 1$

$\cos^2\alpha = \frac{1}{5} \longrightarrow \cos\alpha = \pm\frac{\sqrt{5}}{5} \longrightarrow \cos\alpha = \frac{-\sqrt{5}}{5}$ (غ ق ق)

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الف) $\begin{cases}\sin\varphi = \frac{\sqrt{2}}{10} \\ \cos = -\frac{\sqrt{98}}{10}\end{cases}$

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

ب) $\cos x = 7\sin x$

$\sin^2\alpha + \cos^2\alpha = 50\sin^2\alpha = 1 \longrightarrow \sin\alpha = \frac{\sqrt{2}}{10}$

$\cos^2\alpha = 1 - \sin^2\alpha \longrightarrow \cos^2\alpha = 1 - \frac{2}{100} = \frac{98}{100}$

$\cos\alpha = \frac{\sqrt{98}}{10}$

$\sin\left(\frac{13\pi}{4} + \alpha\right) = \cos\alpha = \frac{\sqrt{98}}{10}$

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$\sin^2 x + \underbrace{\sin^2 x + \cos^2 x}_{1} = \frac{4}{3} \longrightarrow \sin^2 x = \frac{1}{3}$

$\tan^2 x = \frac{1}{\cot^2 x} = \frac{1}{2}$

$1 + \cot^2 x = \frac{1}{\sin^2 x} \times 3$

$\cot^2 x = 2$

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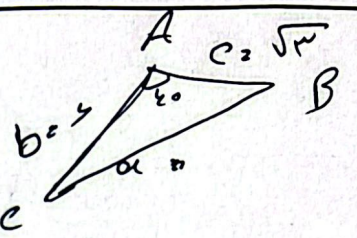
$6\sqrt{2} \times \sin A = 9 \longrightarrow \sin A = \frac{\sqrt{3}}{2} \longrightarrow \hat{A} = 60^\circ$

$6a \times \sin C = 9 \longrightarrow \sin C = \frac{3}{2a}$

$\sqrt{3}a \times \sin B = 9 \longrightarrow \sin B = \frac{3\sqrt{3}}{a}$



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$OF = x\left(\frac{1}{2} \times 2 \times 3 \times \sin 120^\circ\right)$

$6x^2 \times \frac{1}{2} = 27$

$3x^2 = 27$

$x^2 = 18$

$x = 3\sqrt{2}$

محیط $= 2 \times 3\sqrt{2} = 6\sqrt{2}$

$3 \times 3\sqrt{2} = 9\sqrt{2}$

محیط $= 2(6\sqrt{2} + 9\sqrt{2}) = 2 \times 15\sqrt{2} = 30\sqrt{2}$

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$S_{ABC} = \frac{1}{2} \times 7 \times 5 \times \sin A = \frac{35}{2} \sin A = 17/5 \sin A$

$S_{AD\hat{E}} = \frac{1}{2} \times 7 \times 4 \times \sin A = 14 \sin A$

$S_{ABC} - S_{AD\hat{E}} = 17/5 \sin A - 14 \sin A = 1/75$

$\sin A (3/5) = 1/75$

$\sin A = \frac{1}{2} \longrightarrow \cos^2 A = 1 - \sin^2 A = 1 - \frac{1}{4} = \frac{3}{4} \longrightarrow \cos A = \frac{\sqrt{3}}{2}$

$\tan \hat{A} = \frac{\sin A}{\cos A}$

$\frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{\sqrt{3}}{3}$

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$\frac{S_{A\hat{B}C}}{S_{B\hat{M}N}} = 4 \longrightarrow \frac{BM}{AM} = 3$

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

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

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$\cos\alpha < 0 \longrightarrow \frac{-1 - \sin}{\cos} = \frac{\tan \sin\alpha}{|\cos|}$

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$\tan\frac{17\pi}{4} = \tan(4\pi - \frac{\pi}{4}) = -\tan\frac{\pi}{4} = -\frac{\sqrt{3}}{3}$

$\sin\frac{11\pi}{3} = \sin(4\pi - \frac{\pi}{3}) = -\sin\frac{\pi}{3} = -\frac{\sqrt{3}}{2}$

$\cos\frac{10\pi}{3} = \cos(3\pi + \frac{\pi}{3}) = -\cos\frac{\pi}{3} = -\frac{1}{2}$

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

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الف

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

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

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

ب

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

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

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

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

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

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$4 \times \sqrt{3} \times \sin\alpha \times \frac{1}{2} = \frac{9}{2} \rightarrow \sin\alpha = \frac{9}{4\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{9\sqrt{3}}{18} = \frac{\sqrt{3}}{2}$

مثلث $\rightarrow 0 < \alpha < \pi$ $\rightarrow \alpha = \frac{\pi}{3}$ یا $60°$

$\hookrightarrow \alpha = \frac{2\pi}{3}$ یا $120°$ $\rightarrow$ $\frac{\frac{2\pi}{3}}{\frac{\pi}{3}} = \boxed{2}$

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$\frac{S_{ABC}}{S_{BMN}} = \frac{\frac{1}{2} \times AB \times BN \times \sin\hat{B}}{\frac{1}{2} \times BM \times BN \times \sin\hat{B}} = 4 \rightarrow \frac{AB}{BM} = \frac{5}{2}$

$\frac{BM}{BM + AM} = \frac{5}{9} \rightarrow \begin{matrix} BM = 5n \\ AM = 4n \end{matrix} \rightarrow \frac{BM}{AM} = \boxed{\frac{5}{4}}$