۱) $\tan\frac{11\pi}{6} + \sin\frac{15\pi}{6}\cos\frac{13\pi}{6} =$

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

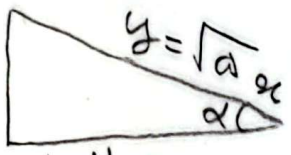
$\tan\frac{17\pi}{9}\sin\frac{11\pi}{3} + \cos\frac{10\pi}{3}$

$\frac{-\sqrt{3}}{3} \times \left(\frac{-\sqrt{3}}{2}\right) + \frac{-\sqrt{3}}{2} = \frac{3}{9} + \frac{-\sqrt{3}}{2} = \frac{3 - 3\sqrt{3}}{9}$

۲) $\cot\alpha = 4 \qquad \frac{3\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha} \xrightarrow{\div\sin\alpha} \frac{3\cot\alpha - 1}{\cot\alpha + 1} = \frac{11}{5}$

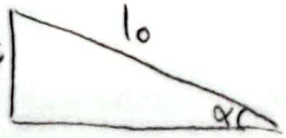
۳) $\sin\alpha = 2\cos\alpha \qquad \cos\alpha = ? \rightarrow \frac{2x}{\sqrt{5}x} = \frac{-2\sqrt{5}}{5}$

α زاویه در ربع دوم



$y^2 = 4x^2 + x^2 = 5x^2$

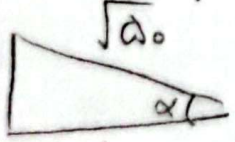
۴) $\sin\alpha = \frac{\sqrt{2}}{10} \qquad \cos\left(\frac{11\pi}{4} + \alpha\right) = \underbrace{\cos\frac{11\pi}{4}}_{\frac{-\sqrt{2}}{2}}\cos\alpha - \underbrace{\sin\frac{11\pi}{4}}_{\frac{\sqrt{2}}{2}}\sin\alpha$



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

$\frac{-\sqrt{2}}{2} \times \frac{-\sqrt{98}}{10} - \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{10} = \frac{\sqrt{196}}{20} - \frac{2}{20} = \frac{\sqrt{196} - 2}{20}$

$\tan\alpha = \frac{1}{7} \qquad \sin\left(\frac{13\pi}{4} + \alpha\right) = \sin\frac{13\pi}{4}\cos\alpha + \sin\alpha\cos\frac{13\pi}{4}$



$\frac{-\sqrt{2}}{2}\left(\frac{4}{\sqrt{50}}\right) = \frac{-4\sqrt{2}}{\sqrt{50}} \quad \frac{-\sqrt{2}}{2} \times \frac{7}{\sqrt{50}} + \frac{-\sqrt{2}}{2} \times \frac{1}{\sqrt{50}} =$

۵) $2\sin^2\alpha + \cos^2\alpha = \frac{4}{3}$

$\sin^2\alpha + \sin^2\alpha + \cos^2\alpha = \frac{4}{3} \rightarrow \sin^2\alpha = \frac{1}{3} \qquad \sin\alpha = \pm\frac{\sqrt{3}}{3}$

$\sin\alpha = \pm\frac{\sqrt{3}}{3} \rightarrow \frac{1}{3} + \cos^2\alpha = \frac{4}{3} \qquad \cos^2\alpha = \frac{2}{3} \qquad \tan^2\alpha = \frac{\sin^2\alpha}{\cos^2\alpha} =$

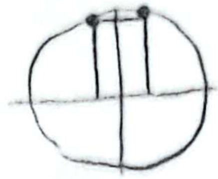
$\frac{\frac{1}{3}}{\frac{2}{3}} = \frac{1}{2}$

(6

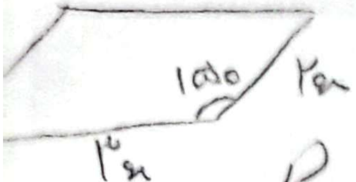
$S_\triangle = \frac{1}{2}ab\sin\alpha \rightarrow 4.5 = \frac{1}{2}\times 6\times\sqrt{3}\times\sin\alpha$

$\sin\alpha = \frac{4.5}{3\sqrt{3}} = \frac{1.5}{\sqrt{3}} = \frac{1.5\sqrt{3}}{3} = \frac{\sqrt{3}}{2}$

$\alpha = 60, 120 \longrightarrow$ ۲ برابر



(7



$S_{\square} = 54$ $\quad 2x \times 3x \times \sin 150 = 54$

$6x^2 \times \frac{1}{2} = 54 \rightarrow 3x^2 = 54$

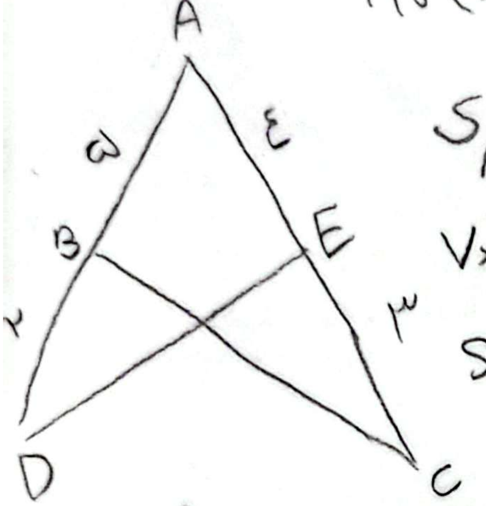
$x = \pm 3\sqrt{2}$

فقط + ← طول ضلع

محیط $P = 2(6\sqrt{2}) + 2(9\sqrt{2})$

$12\sqrt{2} + 18\sqrt{2} = 30\sqrt{2}$

(8



$S_{ABC} - S_{ADE} = 1.75$ $\quad \tan A = \frac{\frac{1}{4}}{\frac{9}{14}} \rightarrow \frac{14}{36}$

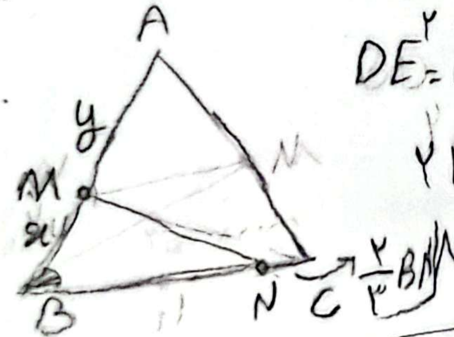
$7\times 5\times\sin A - 7\times 4\times\sin A = \frac{7}{4}$

$\sin A(35 - 28) = \frac{7}{4}$ $\quad \cos A = \frac{9}{14}$

$\sin A = \frac{1.75}{7} = \frac{1}{4}$ $\quad 9 = 14\cos A$

$DE^2 = BC^2 = 25 + 49 - 70\cos A = 16 + 49 - 56\cos A$

(9



$2BN = 3NC$ $\quad S_{ABC} = 3S_{BMN}$

$NC = \frac{2}{3}BN$

$\frac{5}{3}BN \times (x+y)\sin B = 3(BN)(x)\sin B$

$\frac{5}{3}BNx + \frac{5}{3}BNy = 3BNx$

$\frac{4}{3}BNx = \frac{5}{3}BNy$

$\frac{x}{y} = \frac{4}{5}$

(10

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

یا $\cos\alpha$ یا $\sin\alpha$ منفی

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

$\cos\alpha = (-)$

$\sin = (+)$

ناحیه دوم ✓