Date: .....

بلیتا انوری ـ دهم B

سؤال ۱:

الف) $\tan\frac{11\pi}{4} + \sin\frac{13\pi}{4}\cos\frac{14\pi}{4} =$

$\tan(2\pi + \frac{3\pi}{4}) + \sin(\frac{7\pi}{2} + \frac{\pi}{4}) \times \cos(3\pi + \frac{\pi}{4}) = -1 + \frac{2}{4} = \frac{-2}{4} = \frac{-1}{2}$

$\tan 135^\circ \quad \cos 450^\circ \times \cos 45$

ب) $\tan\frac{17\pi}{6}\sin\frac{11\pi}{3} + \cos\frac{10\pi}{3} =$

$\tan(2\pi + \frac{5\pi}{6}) \times \sin(3\pi + \frac{2\pi}{3}) + \cos(3\pi + \frac{\pi}{3}) = \frac{-\sqrt{3}}{3} \times \frac{-\sqrt{3}}{2} - \frac{1}{2} = \frac{3}{6} - \frac{1}{2} = 0$

$\tan 150 \times \sin 300 + \cos 240$

سؤال ۲:

$\cot x = \frac{4}{1}$

$\frac{3\cos x - \sin x}{\cos x + \sin x} \quad \frac{3\times\frac{4}{\sqrt{17}} - \frac{1}{\sqrt{17}}}{\frac{4}{\sqrt{17}} + \frac{1}{\sqrt{17}}} = \frac{\frac{11}{\sqrt{17}}}{\frac{5}{\sqrt{17}}} = \frac{11}{5}$

سؤال ۳:

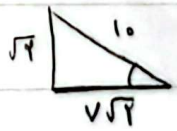
$\sin\alpha = 2\cos\alpha$ (ربع سوم) $\quad \cos\alpha = ?$

$\tan\alpha = 2 \rightarrow 1 + \tan^2 = \frac{1}{\cos^2} \Rightarrow 1 + 4 = 5 \rightarrow \cos^2 = \frac{1}{5} \rightarrow \cos\alpha = -\frac{\sqrt{5}}{5}$

سؤال ۴:

الف) $\cos(\frac{\pi}{2} + \frac{\pi}{4} + \alpha) = \cos(\frac{3\pi}{4} + \alpha) =$

$= \cos\frac{3\pi}{4} + \cos\alpha \rightarrow \frac{-\sqrt{2}}{2} - \frac{-7\sqrt{2}}{10} = \frac{-6\sqrt{2}}{5}$

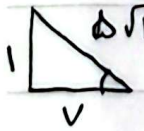


$\cos\alpha = \frac{-7\sqrt{2}}{10}$

ب) $\sin(\frac{13\pi}{4} + \alpha) = \sin(3\pi + \frac{\pi}{4} + \alpha) = \sin(\frac{5\pi}{4} + \alpha) = \sin\frac{5\pi}{4} + \sin\alpha$

$= -\frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{10} = \frac{-4\sqrt{2}}{10}$

$= \frac{-2\sqrt{2}}{5}$



$\Rightarrow \sin\alpha = \frac{1}{5\sqrt{2}} = \frac{\sqrt{2}}{10}$

Date: .....

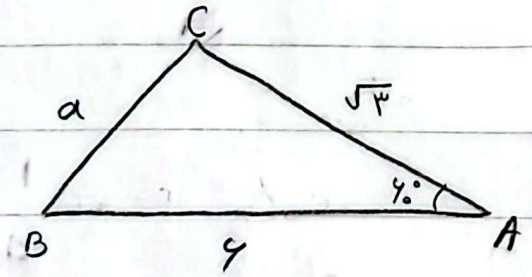
سؤال ۵: $\tan^2 x = ?$

$2\sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow 2\sin^2 x = \frac{4}{3} - \cos^2 x$

$4(1-\cos^2 x) = \frac{4}{3} - \cos^2 x \rightarrow 4 - 4\cos^2 x = \frac{4}{3} - \cos^2 x \rightarrow \boxed{\frac{2}{3} = \cos^2 x}$

$\rightarrow 1 + \tan^2 x = \frac{1}{\cos^2 x} \rightarrow \tan^2 x = \frac{3}{2} - 1 \rightarrow \boxed{\tan^2 x = \frac{1}{2}}$

سؤال ۶:



$\sqrt{2} \times 6 \times \frac{1}{2} \times \sin A = 6,5$

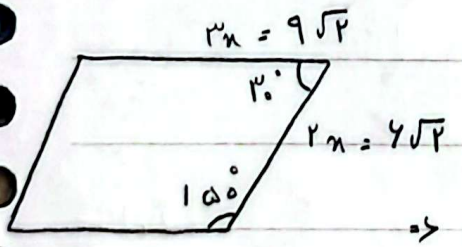
$3\sqrt{2} \times \sin A = 6,5 \rightarrow \sin A = \frac{3}{2\sqrt{3}} = \frac{\sqrt{3}}{2}$

$\sin A = \frac{\sqrt{3}}{2} \rightarrow \hat{A} = 60^\circ \ min$

$\hat{A} = 120^\circ \ max$

$\frac{max}{min} = \frac{120}{60} = 2$

سؤال ۷:

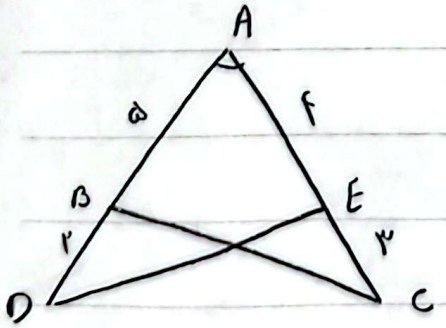


$S = 3x \cdot 2x \cdot \sin 30 = 6x^2 \times \frac{1}{2} = 3x^2$

$3x^2 = 54 \rightarrow x^2 = 18 \rightarrow \boxed{x = 3\sqrt{2}}$

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

سؤال ۸:



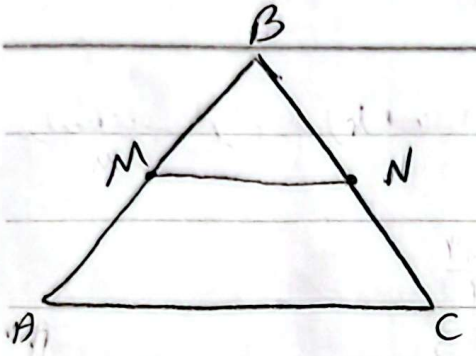
$S_{ABC} - S_{ADE} = 1,75$

$\left(\frac{1}{2} \times 5 \times 7 \times \sin A\right) - \left(\frac{1}{2} \times 7 \times 4 \times \sin A\right) = 1,75$

$\frac{35}{2}\sin A - \frac{28}{2}\sin A = \frac{7}{4} \rightarrow \frac{7}{2}\sin A = \frac{7}{4} \rightarrow \boxed{\sin A = \frac{1}{2}}$

$\hat{A} = 30^\circ \rightarrow \tan 30 = \frac{\sqrt{3}}{3}$

Date: .....



سؤال ۹:

$۲\overline{BN} = ۳NC$

$BN = \frac{۳}{۲} NC$

$S_{ABC} = ۳ S_{AMN} \rightarrow ۳ \times \frac{۱}{۲} \times \overline{BM} \times \overline{BN} \times \sin B = \frac{۱}{۲} \times AB \times BC \times \sin B$

$۳ \times BM \times BN = (AM + MB) BC \rightarrow ۹BM = ۵BM + ۵AM$

$۴BM = ۵AM$

$BM = \frac{۵}{۴} AM \rightarrow \frac{BM}{AM} = \frac{\frac{۵}{۴} AM}{AM} = \frac{۵}{۴}$

سؤال ۱۰:

$$\frac{۱}{\sqrt{\cos^۲ \alpha}} - \tan \alpha = \frac{۱ + \sin \alpha}{|\cos \alpha|} = \frac{۱}{|\cos \alpha|} - \frac{۱ + \sin \alpha}{|\cos \alpha|} = \tan \alpha$$

$$\rightarrow -\frac{\sin \alpha}{|\cos \alpha|} = \frac{\sin \alpha}{\cos \alpha} \rightarrow \cos \alpha < ۰$$

$$\frac{|\sin \alpha|}{\cos} = \frac{-۱}{\cot \alpha} \Rightarrow \boxed{\sin < ۰} \Rightarrow$$ ناحیه سوم

$\cot \alpha \downarrow \frac{-\sin}{\cos}$