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

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الف) $\tan\frac{11\pi}{4} + \sin\frac{13\pi}{4}\cdot\cos\frac{15\pi}{4} = -1 - \frac{\sqrt{2}}{2}\times\left(-\frac{\sqrt{2}}{2}\right) = -1+\frac{1}{2} = -\frac{1}{2}$ ✓

$\tan\frac{9\pi}{4}$ $\sin\frac{7\pi}{4}$ $\cos\frac{5\pi}{4}$

(۱/۲۵)

ب) $\tan\frac{17\pi}{4}\cdot\sin\frac{11\pi}{3} + \cos\frac{10\pi}{4} = -\frac{\sqrt{3}}{3}\cdot\left(-\frac{\sqrt{3}}{2}\right) - \frac{1}{2} = \frac{1}{2}$

$\tan\frac{9\pi}{4}$ $\sin\frac{9\pi}{3}$ $\cos\frac{5\pi}{2}$

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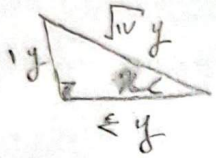

$\Rightarrow \cos\alpha = \frac{4y}{\sqrt{17}y}$ $\quad \sin\alpha = \frac{1y}{\sqrt{17}y}$

$\Rightarrow \frac{3\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha} = \frac{\frac{12-1}{\sqrt{17}}}{\frac{4+1}{\sqrt{17}}} = \frac{11}{5}$ ✓

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

$\Rightarrow (2\cos\alpha)^2 + \cos^2 = 1 \Rightarrow 5\cos^2 = 1 \Rightarrow \cos^2 = \frac{1}{5}$

$\Rightarrow \cos = \pm\frac{1}{\sqrt{5}}$ چون $\cos = -\frac{1}{\sqrt{5}}$ ✓

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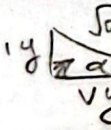
$\cos\left(\frac{11\pi}{4}+\alpha\right) = \cos\frac{8\pi}{4}\cdot\cos\alpha - \sin\frac{8\pi}{4}\times\sin\alpha$

$\Rightarrow -\frac{\sqrt{2}}{2}\cdot\frac{\sqrt{98}}{10} = \frac{\sqrt{196}}{20}$ $\quad -\frac{\sqrt{2}}{2}\times\frac{\sqrt{2}}{10} = -0.1 \Rightarrow \frac{\sqrt{196}}{20} - 0.1 = \frac{14-2}{20} = \frac{12}{20} = \frac{3}{5}$

$\sin\left(\frac{15\pi}{4}+\alpha\right) = \sin\frac{7\pi}{4}\cdot\cos\alpha + \cos\frac{7\pi}{4}\cdot\sin\alpha$



$\Rightarrow \cos\alpha = \frac{2}{\sqrt{5}}$ $\quad \Rightarrow -\frac{\sqrt{2}}{2}\cdot\frac{2}{\sqrt{5}} - \frac{\sqrt{2}}{2}\cdot\frac{1}{\sqrt{5}} = \frac{-2}{10} + \frac{-1}{10} = \frac{-3}{10}$

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

جواب پایین صفحه

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

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

$\sin^2\alpha = \frac{1}{2}$

$\cos^2\alpha = \frac{1}{2}$

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

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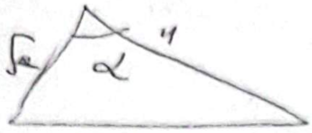
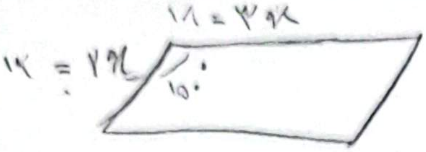
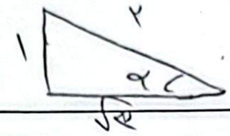
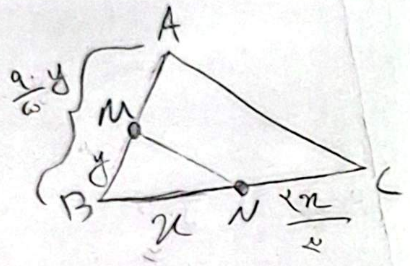
 $S_{مثلث} = ۴ \times \frac{۱}{۲} \times \sqrt{۲} \times \sin\alpha = ۲,۵$ $\Rightarrow \sin\alpha = \frac{\frac{۵}{۲}}{۲\sqrt{۲}} = \frac{۴}{۲\sqrt{۲}} = \frac{\sqrt{۲}}{۲}$ $\frac{max}{min} = \frac{۱۲۰}{۶۰} = ۲$ $= \lvert(\min\alpha = ۶۰°) - (\max\alpha = ۱۲۰°)\rvert = ۶۰°$	۱,۲۵	۶
 $\frac{۲x \times ۳x \times \frac{۱}{۲}}{۲} = ۵۴$ $\Rightarrow \frac{۳}{۲} x^۲ = ۵۴ \Rightarrow x^۲ = ۳۶$ ⟨ $x = -۶$ غ ق ق ، $x = +۶$ ✓ متوازی الاضلاع $S = ۲(۲x \times ۳x \times \frac{۱}{۲} \times \sin ۱۵۰) = ۲ \times ۲x \times ۳x \times \frac{۱}{۲} \times \frac{۱}{۲} = ۳x^۲ = ۵۴$ ↳ $x = ۳\sqrt{۲}$ $\Rightarrow P = ۲(۱۸+۱۲) = ۶۰$ (محیط) $P = (۲x + ۳x)۲ = ۱۰x = ۱۰(۳\sqrt{۲}) = ۳۰\sqrt{۲}$	۰,۷۵	۷
$S_{ABC} = \frac{۵ \times ۷ \times \sin\alpha}{۲} = \frac{۳۵}{۲}\sin\alpha$ $S_{ADE} = \frac{۴ \times ۷ \times \sin\alpha}{۲} = ۱۴ \sin\alpha$ $\Rightarrow \frac{۳۵ \sin\alpha - ۲۸ \sin\alpha}{۲} = ۱,۷۵ \Rightarrow ۳,۵ \sin\alpha = ۱,۷۵ \Rightarrow \sin\alpha = \frac{۱}{۲}$ $\Rightarrow$  $\Rightarrow \tan\alpha = \frac{۱}{\sqrt{۳}}$ ✓	۲	۸
 $۲\overline{BN} = ۳\overline{NC} \Rightarrow NC = \frac{۲}{۳}BN$ $\frac{\overline{AB} \times \overline{BC} \times \sin B}{۲} = ۳ \times \frac{MB \cdot BN \cdot \sin B}{۲}$ $\overline{AB} \times \frac{۵x}{۳} = MB \cdot ۳x$ $\frac{AB}{MB} = \frac{۳x}{\frac{۵x}{۳}} = \frac{۹}{۵} \Rightarrow ۵AB = ۹MB \Rightarrow AB = \frac{۹}{۵}MB \Rightarrow AB = \frac{۹}{۵}y, BM = y \Rightarrow AM = \frac{۴}{۵}y \Rightarrow \frac{BM}{AM} = \frac{y}{\frac{۴}{۵}y} = \frac{۵}{۴}$ ✓	۲	۹
$\frac{\lvert\sin\alpha\rvert}{\cos\alpha} = \frac{-۱}{\cot\alpha}$ (−tan) , $\frac{۱}{\sqrt{\cos^۲\alpha}} - \tan\alpha = \frac{۱+\sin\alpha}{\lvert\cos\alpha\rvert}$ $\frac{۱}{\lvert\cos\alpha\rvert} - \frac{\sin}{\cos} = \frac{۱+\sin\alpha}{\lvert\cos\rvert}$ $\frac{\lvert\sin\alpha\rvert}{\cos\alpha}$ ⟨ $\sin < ۰$ −tan ✓ ، $\sin > ۰$ = tan غ ق ق ↳ $\cos > ۰ \Rightarrow \frac{۱-\sin}{\lvert\cos\rvert}$	۲	۱۰

$\cos < ۰ \Rightarrow \frac{۱}{-\cos\alpha} - \frac{\sin}{\cos} = \frac{-۱-\sin}{\cos}$

$= \frac{۱+\sin}{-\cos} = \frac{۱+\sin}{\lvert\cos\rvert}$ ✓ ، $\Rightarrow$ ✓ تعیین علامت

سوال ۴) الف) ربع دوم $\begin{cases}\sin\alpha>0\\ \cos\alpha<0\end{cases}$ $\rightarrow \cos^2\alpha = 1-\sin^2\alpha \rightarrow \cos^2\alpha = 1-\left(\frac{\sqrt{۲}}{۱۰}\right)^2 = \frac{۹۸}{۱۰۰}$

$\xrightarrow{\sqrt{\ }} \cos\alpha = \pm\frac{\sqrt{۹۸}}{۱۰} \xrightarrow{\text{ربع دوم}} -\frac{\sqrt{۹۸}}{۱۰} = \frac{-۷\sqrt{۲}}{۱۰}$

$\cos\left(\frac{۱۱\pi}{۴}+\alpha\right) \rightarrow \cos\left(۳\pi-\frac{\pi}{۴}+\alpha\right) = \cos\left(۳\pi+\left(\alpha-\frac{\pi}{۴}\right)\right) = -\cos\left(\alpha-\frac{\pi}{۴}\right)$

$\cos(\alpha-\beta) = \cos\alpha\cos\beta+\sin\alpha\sin\beta$

$-\cos\left(\alpha-\frac{\pi}{۴}\right) = -\left(\cos\alpha\cos\frac{\pi}{۴}+\sin\alpha\sin\frac{\pi}{۴}\right) = -\left(\frac{\sqrt{۲}}{۲}\cos\alpha+\frac{\sqrt{۲}}{۲}\sin\alpha\right) =$

$-\frac{\sqrt{۲}}{۲}\left(-\frac{۷\sqrt{۲}}{۱۰}+\frac{\sqrt{۲}}{۱۰}\right) = -\frac{\sqrt{۲}}{۲}\times\frac{-۷\sqrt{۲}}{۱۰}-\frac{۱}{۱۰} = \frac{۶}{۱۰} = \frac{۳}{۵}$

ب) $1+\tan^2\alpha = \frac{1}{\cos^2\alpha} \rightarrow 1+\frac{1}{۴۹} = \frac{1}{\cos^2\alpha} \rightarrow \cos^2\alpha = \frac{۴۹}{۵۰} \xrightarrow{\text{ربع اول}} \cos\alpha = \frac{۷\sqrt{۲}}{۱۰}$

$\sin^2\alpha = 1-\cos^2\alpha \rightarrow \sin^2\alpha = 1-\frac{۴۹}{۵۰} = \frac{1}{۵۰} \rightarrow \sin^2\alpha = \frac{1}{۵۰} \xrightarrow[\sin\alpha>0]{\text{ربع اول}} \sin\alpha = \frac{\sqrt{۲}}{۱۰}$

$\sin\left(\frac{۱۱\pi}{۴}+\alpha\right) = \sin\left(۳\pi+\frac{\pi}{۴}+\alpha\right) = \sin\left(۳\pi+\left(\frac{\pi}{۴}+\alpha\right)\right) = -\sin\left(\frac{\pi}{۴}+\alpha\right)$

$\sin(\alpha+\beta) = \sin\alpha\sin\beta+\cos\alpha\cos\beta$

$-\sin\left(\frac{\pi}{۴}+\alpha\right) = -\left(\sin\frac{\pi}{۴}\cos\alpha+\cos\frac{\pi}{۴}\sin\alpha\right) = -\frac{\sqrt{۲}}{۲}(\cos\alpha+\sin\alpha) =$

$-\frac{\sqrt{۲}}{۲}\left(\frac{۷\sqrt{۲}}{۱۰}+\frac{\sqrt{۲}}{۱۰}\right) = -\frac{۸}{۱۰} = \frac{-۴}{۵}$