[۱۴]

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

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الف) $\tan\frac{11\pi}{4} \rightarrow \frac{11\pi}{4\pi} = \frac{D}{180} \rightarrow D = 495 - 360 = 135^\circ$; $\tan 135^\circ = 1$ / $\sin\frac{15\pi}{4} \rightarrow \frac{15\pi}{4\pi} = \frac{D}{180} \rightarrow D = 675 - 360 = 315^\circ$; $\sin 315^\circ = \frac{-\sqrt2}{2}$

$\cos\frac{13\pi}{4} \rightarrow \frac{13\pi}{4\pi} = \frac{D}{180} \rightarrow D = 585 - 360 = 225^\circ$; $\cos 225^\circ = \frac{-\sqrt2}{2}$ // $= -1 + \frac{-\sqrt2}{2} \times \frac{-\sqrt2}{2} = \frac{2}{2} + \frac{2}{4} = \frac{3}{2} = 1{,}5$

[$-1 + \frac{1}{2} = \frac{-1}{2}$] [1,5]

ب) $\tan\left(\frac{12}{6}\pi + \frac{5}{6}\pi\right) \times \sin\left(\frac{6}{3}\pi + \frac{4}{3}\pi\right) + \cos\left(\frac{6}{3}\pi + \frac{4}{3}\pi\right) = \frac{1}{\sqrt3} \times \frac{\sqrt3}{2} + \frac{-1}{2} = \frac{1}{2} - \frac{1}{2} = 0$

(2π = ۱ دور ; 150° ، 300° ، 240°)

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

$\frac{3\cos x - \sin x}{\cos x + \sin x} = \frac{3(4\sin x) - \sin x}{4\sin x + \sin x} = \frac{11\sin x}{5\sin x} = \frac{11}{5}$

[۲]

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$\sin^2 x + \cos^2 x = 1 \rightarrow (2\cos x)^2 + \cos^2 x = 1 \rightarrow 4\cos^2 x + \cos^2 x = 1 \rightarrow 5\cos^2 x = 1 \rightarrow \cos^2 x = \frac{1}{5} \rightarrow \cos x = \frac{-1}{\sqrt5}$

$\sin\alpha = \frac{-2}{\sqrt5}$, $\cos\alpha = \frac{-1}{\sqrt5}$

[۲]

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الف) $\sin^2\alpha + \cos^2\alpha = 1 \rightarrow \cos^2\alpha = 1 - \frac{2}{100} = \frac{98}{100} \rightarrow \cos\alpha = \frac{-\sqrt{98}}{10}$ / $\frac{11\pi}{4} = \frac{8}{4}\pi + \frac{3\pi}{4} = 135^\circ$

$\cos(135 + \alpha) = \frac{-\sqrt2}{2} \times \frac{-\sqrt{98}}{10} - \frac{\sqrt2}{2} \times \frac{\sqrt2}{10} = \frac{14}{20} - \frac{2}{20} = \frac{12}{20} = \frac{3}{5}$

ب) $\tan\alpha = \frac{\sin\alpha}{\cos\alpha} = \frac{1}{7} \rightarrow 7\sin\alpha = \cos\alpha \rightarrow \sin^2\alpha + \cos^2\alpha = 1 \rightarrow \sin^2\alpha + 49\sin^2\alpha = 1 \rightarrow \sin\alpha = \frac{1}{\sqrt{50}}$, $\cos\alpha = \frac{7}{\sqrt{50}}$

$\frac{13\pi}{4} = \frac{8}{4}\pi + \frac{5}{4}\pi = 225^\circ$ / $\sin(225 + \alpha) = \frac{1}{\sqrt{50}} \times \frac{-\sqrt2}{2} + \frac{7}{\sqrt{50}} \times \frac{-\sqrt2}{2} = \frac{-1}{10} + \frac{-7}{10} = \frac{-4}{5}$

[۳]

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$2\sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow \sin^2 x + \sin^2 x + \cos^2 x = \frac{4}{3} \rightarrow \sin^2 x = \frac{1}{3} \rightarrow \sin x = \pm\frac{1}{\sqrt3}$

$2 \times \frac{1}{3} + \cos^2 x = \frac{4}{3} \rightarrow \cos^2 x = \frac{2}{3}$

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

[۲]

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$\sin\alpha \times ۴ \times \sqrt{۳} \times \frac{1}{۲} = \frac{۴۵}{۱۰} \rightarrow \sin\alpha = \dots \times \frac{\sqrt{۳}}{\sqrt{۳}} = \frac{۹\sqrt{۳}}{۱۸} = \frac{\sqrt{۳}}{۲} \rightarrow \alpha = ۱۲۰° \text{ یا } ۶۰°$

کمترین یا بیشترین

$\frac{Max\,\alpha}{Min\,\alpha} = \frac{۱۲۰}{۶۰} = ۲$

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$S = ۵۴ = ۲x \times ۳x \times \frac{\sin ۱۵۰}{۲} \rightarrow ۳x^2 = ۵۴ \rightarrow x^2 = ۱۸ \rightarrow x = \pm\sqrt{۱۸} = \pm ۳\sqrt{۲}$

محیط $= ۲x + ۲x + ۳x + ۳x = x(۲+۲+۳+۳) = ۱۰ \times ۳\sqrt{۲} = ۳۰\sqrt{۲}$

۳

۸

$S_{ABC} = \sin A \times \frac{1}{۲} \times ۵ \times ۷$

$S_{ADE} = \sin A \times \frac{1}{۲} \times ۴ \times ۷$

$S_{ABC} - S_{ADE} = \sin A\left(\frac{1}{۲} \times ۵ \times ۷ - \frac{1}{۲} \times ۴ \times ۷\right) = ۱,۷۵$ ($۱۷,۵ - ۱۴ = ۳,۵$)

$\sin A = ۰,۵ = \frac{1}{۲} \rightarrow A = ۱۵۰°$ ✗ ، $A = ۳۰°$ ✓ → حاده

$\tan A = \frac{\sin A}{\cos A} = \frac{1}{۲} \times \frac{۲}{\sqrt{۳}} = \frac{1}{\sqrt{۳}} = \frac{\sqrt{۳}}{۳}$

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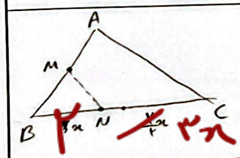


$S_{ABC} = ۳ \times S_{BMN} \rightarrow \frac{S_{ABC}}{S_{BMN}} = ۳$

$\frac{\sin B \times \frac{1}{۲} \times BA \times ۵x}{\sin B \times \frac{1}{۲} \times BM \times ۳x} = ۳ \rightarrow ۳BM = (BM + MA)۲,۵$

$۳BM = ۲,۵BM + ۲,۵MA$

$۰,۵BM = ۲,۵MA \rightarrow \frac{BM}{MA} = ۵$

$\frac{AB}{BM} = \frac{۹}{۵}$

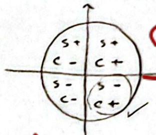
$\frac{BM}{AB} = \frac{۵}{۹} \rightarrow \frac{BM}{AM} = \frac{۵}{۴}$

۰/۵

۱۰

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

$\Downarrow$ $\cos\alpha \rightarrow +$ ، $\Downarrow$ $\sin\alpha \rightarrow -$



ربع چهارم

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

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

$|\cos\alpha| = -\cos\alpha \rightarrow \cos\alpha < 0$

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

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

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