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ب) $\tan(10\pi - \frac{\pi}{4}) + \sin(4\pi - \frac{\pi}{4})\cos(\frac{10\pi + \pi}{4})$ (سوال ۱ خارج از حالی اعتبار)

ج) $\tan(\pi - \frac{\pi}{4}) + \sin(\pi - \frac{\pi}{4})\cos(\pi + \frac{\pi}{4})$

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

$\Rightarrow -1 + \frac{1}{2} = -\frac{1}{2}$

سوال ۱ - ب)

$$\tan\left(3\pi - \frac{\pi}{4}\right) \sin\left(4\pi - \frac{\pi}{3}\right) + \cos\left(3\pi + \frac{\pi}{3}\right)$$

$$\tan\left(\pi - \frac{\pi}{4}\right) \sin\left(\pi - \frac{\pi}{3}\right) + \cos\left(\pi + \frac{\pi}{3}\right)$$

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

$$= 0$$

$$\frac{3\cos\alpha - \sin\alpha}{\cos\alpha + \sin\alpha} \xrightarrow{\div \sin\alpha} \frac{3\cot\alpha - 1}{\cot\alpha + 1} = \frac{12-1}{5} = \frac{11}{5}$$

(سؤال ۲)

تعطیل

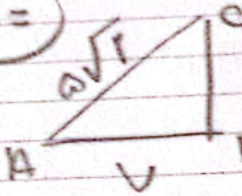
سوال ۳) $(2\cos\alpha)^2 + \cos^2\alpha = 1$ $\sin^2\alpha + \cos^2\alpha = 1$

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

$\Rightarrow \cos\alpha = \pm\frac{1}{\sqrt{5}}$

$\leftarrow$ در ربع سوم $= -\frac{1}{\sqrt{5}} = \frac{-\sqrt{5}}{5}$

ω =



سؤال ۴) $AB \Rightarrow 50 = 1 + n^2 \quad (n=7)$

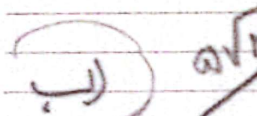
$\cos\alpha = \frac{-7}{5\sqrt{2}} \qquad \sin\alpha = \frac{1}{5\sqrt{2}}$

$\frac{11\pi}{4} = 2\pi + \frac{3\pi}{4} - \frac{3\pi}{4} + \pi$

$\cos\left(\frac{3\pi}{4} + \alpha\right) = \left(\cos\frac{3\pi}{4} \times \cos\alpha\right) - \left(\sin\frac{3\pi}{4} \times \sin\alpha\right)$

$\Rightarrow \left(\frac{-\sqrt{2}}{2} \times \frac{-7}{5\sqrt{2}}\right) - \left(\frac{\sqrt{2}}{2} \times \frac{1}{5\sqrt{2}}\right) = \frac{7}{10} - \frac{1}{10} = \frac{6}{10} = +\frac{3}{5}$

ب)



$\sin\alpha = \frac{1}{5\sqrt{2}} \qquad \cos\alpha = \frac{7}{5\sqrt{2}}$

$\frac{13\pi}{4} = 3\pi + \frac{\pi}{4} = \frac{5\pi}{4}\left(\frac{\pi}{4} + \pi\right)$

$\sin\left(\frac{5\pi}{4} + \alpha\right) = \left(\sin\frac{5\pi}{4} \times \cos\pi\right) + \left(\sin\alpha \times \cos\frac{5\pi}{4}\right)$

$\left(\frac{5\pi}{4} = \pi + \frac{\pi}{4}\right)$

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

← منفی

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سوال ۵)

$$\sin^2\alpha + \sin^2\alpha\cos^2\alpha = \frac{4}{3} \Rightarrow \sin^2\alpha = \frac{4}{3} - 1 = \frac{1}{3}$$

$$\Rightarrow \sin^2\alpha + \cos^2\alpha = 1 \rightarrow \cos^2\alpha = 1 - \sin^2\alpha = 1 - \frac{1}{3} = \frac{2}{3}$$

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

سوال ۶)

$$2 \times \sqrt{12} \times \sin\alpha = \sqrt{12} \times \sqrt{3}$$

$$\frac{1}{2} \times 2 \times \sqrt{3} \times \sin\alpha = \frac{3}{2}$$

$$\Rightarrow \sin\alpha = \frac{\sqrt{3}}{2} \rightarrow \sin 60^\circ, 120^\circ$$

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

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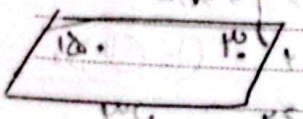
$P = 15\sqrt{2} \times 2 = 30\sqrt{2}$

$2m = 2(4\sqrt{2}) = 9\sqrt{2}$

$4^2 m = 4^2(4^2\sqrt{2}) = 9\sqrt{2}$



سؤال ۷)

$2m \times 4^2 m \times \sin 30 = 36$

$2m \times 16m \times \frac{1}{2} = 36 \Rightarrow 16m^2 = 36 \times 2$

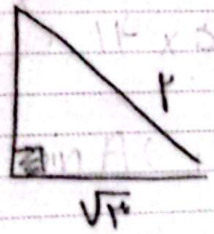
$9m^2 = \frac{36}{9} \times 2 \Rightarrow m^2 = 16 \Rightarrow m = \pm\sqrt{16} = \pm 4$

$m = 4\sqrt{2}$

سؤال ۸)

$\frac{1}{2} \times 5 \times 7 \times \sin A = \frac{1}{2} \times 6 \times 7 \times \sin A = 14 \sin A$

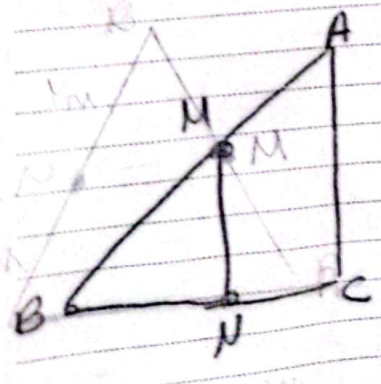
$14\sqrt{5} \sin A = 14 \sin A = 14\sqrt{5} \sin A \rightarrow 14\sqrt{5} \rightarrow \sin A = \frac{1}{2}$



$2^2 - \sqrt{3}^2 = m^2 \Rightarrow 4 - 3 = 1 = m^2 \Rightarrow m = \pm 1$

$\tan = \frac{\sin}{\cos} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

سؤال ۹)



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

$\frac{S_{ABC}}{S_{BMN}} = 3 \rightarrow \frac{\frac{1}{2} \times AB \times \frac{5}{2} m \times \sin B}{\frac{1}{2} \times NB \times \frac{3}{2} m \times \sin B} = \frac{\frac{5}{2} AB}{NB} = 3$

$5AB = 9MB \Rightarrow MB = \frac{5}{9} AB \rightarrow MA = \frac{4}{9} AB$

$\frac{BM}{AM} = \frac{\frac{5}{9} AB}{\frac{4}{9} AB} = \frac{5}{4}$

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سؤال ۱۰)

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

$$\frac{1}{2|\cos\alpha|} - \frac{1+\sin\alpha}{|\cos\alpha|} = \frac{\sin^2\alpha}{|\cos\alpha|} \xrightarrow{\text{نسبت شده}} -\frac{\sin\alpha}{\cos\alpha} \Rightarrow \cos\alpha < 0$$

$\sin\alpha < 0$ ، $\cos\alpha < 0$ = ناحیه سوم