

الف) $120^\circ = (x) \text{ rad} \rightarrow \frac{120}{180} = \frac{x \text{ rad}}{\pi} \rightarrow \frac{120\pi}{180}$ ✓

ب) $135^\circ = (x) \text{ rad} \rightarrow \frac{135}{180} = \frac{x \text{ rad}}{\pi} \rightarrow \frac{135\pi}{180}$ ✓

ج) $\frac{45}{180} \text{ rad} = (x)^\circ \rightarrow \frac{45\pi}{180} = \frac{x}{180} = \frac{45}{180} \times 180 = 45^\circ$ ✓

د) $\frac{45}{180} \text{ rad} = (x)^\circ \rightarrow \frac{45\pi}{180} = \frac{x}{180} \rightarrow 180^\circ$ ✓

۱۲) $\frac{120\pi}{180}$ و $\frac{135\pi}{180}$ را در $\frac{a\pi}{\pi}$ قرار ده

$\frac{120\pi}{180} = \frac{120}{180} \sim \frac{120a}{180} \times 9 = \frac{120}{180} a$

$\frac{a\pi}{\pi} = \frac{120}{180} \sim \frac{a}{180} \times 180 = \frac{120a}{180}$

$\Rightarrow 180a + \frac{120a}{180} + \frac{45a}{180} = 180$

$\frac{120a}{180} = 180 \Rightarrow [a = 180]$

الف) $\cos 45^\circ \cos 45^\circ - \sin 45^\circ \sin 135^\circ - \tan 45^\circ + \tan 135^\circ =$
 $(\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}) - (\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}) - 1 + 1 = 1$ ✓

ب) $\frac{\tan 135^\circ + \tan 45^\circ + \tan 45^\circ}{\tan 135^\circ \tan 45^\circ} = \frac{\frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}} = \frac{\frac{2}{\sqrt{2}}}{\frac{1}{2}} = \frac{2\sqrt{2}}{1} = 2\sqrt{2}$ ✓

$-\sin 135^\circ \cos 45^\circ + \cos 135^\circ \sin 45^\circ = \sin 2\theta$

$-\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \sin 2\theta \sim -\frac{1}{2} + \frac{1}{2} = 0 = \frac{1}{2} \rightarrow \sin 2\theta = \frac{1}{2}$

$\sin \theta = \sqrt{\frac{1}{2}} \sim \pm \frac{1}{\sqrt{2}} = \pm \frac{\sqrt{2}}{2} \Rightarrow \tan \theta = \pm 1$

$\sin \theta > 0 \rightarrow \sin \theta = \frac{\sqrt{2}}{2}$ و $\tan \theta > 0 \rightarrow \tan \theta = 1$

$\frac{2 \tan 45^\circ (1 - \tan 135^\circ)}{(1 - \tan 45^\circ \tan 135^\circ)} = \tan \theta$

$\frac{2 \times \frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}} \times \frac{1}{\sqrt{2}}} = \frac{2}{1} = 2$

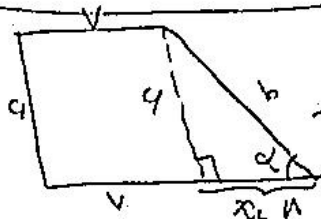
$\frac{2 \times \frac{1}{\sqrt{2}}}{\frac{1}{\sqrt{2}}} = \sqrt{2}$

الف) $\tan \theta = 2\sqrt{2}$
 $\theta = 45^\circ \rightarrow \frac{45}{180} = \frac{x}{\pi}$
 $[Rad = \frac{x\pi}{180}]$

$\frac{1^\circ \sin \theta - \cos \theta}{\sin \theta - 1^\circ \cos \theta} = \frac{1^\circ \sin \theta - 1}{\sin \theta - 1^\circ} = \frac{1^\circ}{1} = 1^\circ$

$\tan \theta = 1$ ✓

مسئله ۱۷۵؟ $\sin \varphi = \frac{4}{10}$



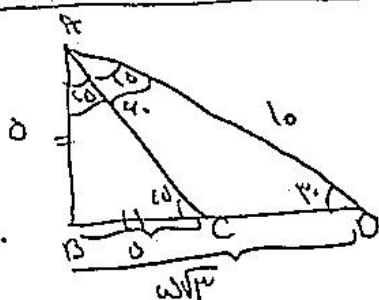
$x^2 = 10^2 - 4^2 = x^2 = 96$

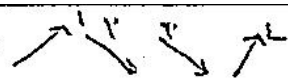
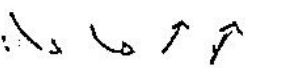
$P = 4 + 16 + 16 + 16 = 52$ ✓

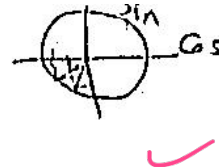
$\sin 45^\circ = \frac{y}{10} \Rightarrow y = 0$

$\frac{\sqrt{2}}{2} \sin 45^\circ = \frac{y}{10} \Rightarrow \frac{\sqrt{2}}{2} \times \frac{1}{\sqrt{2}} = \frac{y}{10} \Rightarrow y = 5$ ✓

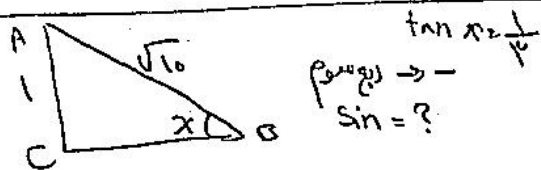
$CD = BD - BC = 5\sqrt{2} - 5$



$\sin :$ 
 $\cos :$ 



(9) الف ربع دوم
 ب ربع دوم



$$\begin{aligned}
 AB &= \sqrt{1+9} = \sqrt{10} \\
 \sin &= -\frac{1}{\sqrt{10}} = -\frac{\sqrt{10}}{10}
 \end{aligned}$$

د

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