

الف - $27^\circ = (x) \text{ Rad}$

$$\frac{27^\circ}{180^\circ} = \frac{x}{\pi}$$

$$x = \frac{3\pi}{40}$$

ب - $140^\circ = (x) \text{ Rad}$

$$\frac{140^\circ}{180^\circ} = \frac{x}{\pi} \rightarrow x = \frac{70\pi}{9}$$

ج - $\frac{5\pi}{14} \text{ Rad} = (x)^\circ$

$$\frac{\frac{5\pi}{14}}{\pi} = \frac{x}{180} \quad \frac{5}{14} = \frac{x}{180} \quad x = \frac{5 \times 180}{14} = 64.2857$$

د - $\frac{4\pi}{9} \text{ rad} = (x)^\circ$

$$\frac{\frac{4\pi}{9}}{\pi} = \frac{x}{180} \quad \frac{4}{9} = \frac{x}{180} \quad x = \frac{4 \times 180}{9} = 80$$

① $10a \rightarrow 10a$

② $\frac{140a}{9} \rightarrow 140a$

③ $\frac{a\pi}{1} \rightarrow 10a$

* جواب را به درجه تبدیل کنید.

$$\frac{140a}{9} = \frac{D}{180} \quad \frac{140a}{9 \times 180} = \frac{D}{180} \quad \frac{D}{180} = \frac{140a}{9 \times 180}$$

$$D = \frac{140a \times 180}{9 \times 180} = \frac{140a}{9}$$

$$\frac{a\pi}{1} = \frac{D}{180} \quad \frac{a}{1} = \frac{D}{180} \quad D = \frac{180 \times a}{1} = 180a$$

$$10a + \frac{140a}{9} + \frac{180a}{9} = 180$$

$$\frac{10a + 140a + 180a}{9} = 180$$

$$330a = 180 \times 9 \rightarrow a = 4.909$$

الف - $\cos^2 45^\circ \cos^2 45^\circ - \sin^2 45^\circ \sin^2 45^\circ - \tan^2 45^\circ + 2 \cot^2 45^\circ = \frac{0.707}{2} - \frac{0.707}{2} - 1 + 2 = 1$

$$\frac{1}{4} \times \frac{0.707}{2} = \frac{0.707}{4}$$

$$\frac{0.707}{4} \times \frac{1}{4} = \frac{0.707}{16}$$

$$\frac{0.707}{4} = 1$$

$$2 \times \frac{0.707}{4} = 0.3535$$

ب - $\frac{\tan^2 45^\circ + \tan^2 45^\circ + \tan^2 45^\circ}{\cot^2 45^\circ - \cot^2 45^\circ} = \frac{1 + 1 + 1}{0.707 - \frac{1}{0.707}} = \frac{3}{0.707 - 1.414} = \frac{3}{-0.707} = -4.242$

$\tan 45^\circ = \frac{1}{0.707} = 1.414$ $\tan 45^\circ = \frac{0.707}{1} = 0.707$ $\cot 45^\circ = \frac{1}{0.707} = 1.414$ $\cot 45^\circ = \frac{0.707}{1} = 0.707$

$\tan 45^\circ = 1$ $\cot 45^\circ = 1$

$\theta \rightarrow$ زاویه

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

$\tan \theta = \tan 45^\circ = 1$

$-\frac{1}{4} \times \frac{1}{4} = -\frac{1}{16}$ $\frac{0.707}{4} \times \frac{0.707}{4} = \frac{0.5}{16}$

$\frac{0.5}{16} - \frac{1}{16} = \frac{-0.5}{16} = -\frac{1}{32}$

$\sin^2 \theta = -\frac{1}{32} \rightarrow \sin \theta = \frac{\sqrt{32}}{32}$

* چون زاویه داده است پس $\sin \theta = \frac{\sqrt{32}}{32}$ و $\theta = 45^\circ$

$\theta \rightarrow$ زاویه

$\frac{2 + \tan^2 45^\circ (1 - \tan^2 45^\circ)}{(1 - \cot^2 45^\circ)^2} = \tan \theta \rightarrow \frac{2 + 1(1 - 1)}{(1 - 1)^2} = \frac{2}{0} = \infty$

$2 + \tan^2 45^\circ = \frac{2}{0.707}$

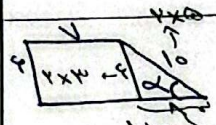
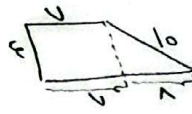
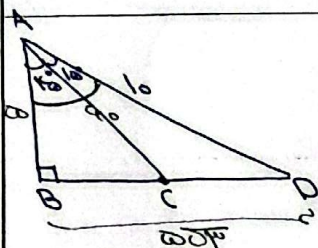
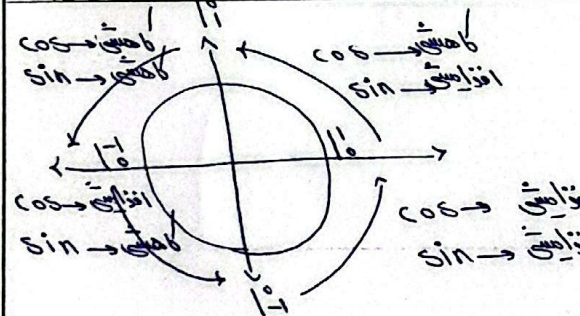
$1 - \tan^2 45^\circ = 1 - \frac{1}{0.707} = \frac{0.707}{0.707} = 1$

$1 - \cot^2 45^\circ = 1 - \frac{1}{0.707} = \frac{0.707}{0.707} = 1$ $\left(\frac{0.707}{0.707}\right)^2 = 1$

* چون θ زاویه داده است $\theta = 45^\circ$

$\frac{1}{180} = \frac{\text{Rad}}{\pi} \rightarrow \text{Rad} = \frac{\pi}{180}$

* ابتدا را به درجه ۴۰ را باید به راد تبدیل کنیم!

$\tan \theta = \omega \quad \frac{3 \sin \theta - \cos \theta}{\sin \theta - 4 \cos \theta} \text{ باطل } \rightarrow \frac{1 \cos \theta - \cos \theta}{\omega \cos \theta - 4 \cos \theta} = \frac{1 \cos \theta}{\cos \theta}$ $\frac{\sin \theta}{\cos \theta} = \omega$ $\sin \theta = \omega \cos \theta$	 $\sin \alpha = \frac{4}{5}$ $P_{\Delta} = P$ $\sin = \frac{\text{دایره}}{\text{مربع}}$ → $\sin = 10$ → $2 \times 4 = 8$  $P_{\Delta} = 4 + 1 + 1 + 10 = 16$
 $DC = ?$ $\sin \epsilon = \frac{AB}{AC} = \frac{4}{5}$ $\sin = \frac{\text{مقابل}}{\text{مربع}}$ $\frac{4}{5} = \frac{x}{10}$ $\rightarrow x = \frac{10 \times 4}{5} = 8$ $BD = 8$ $\cos \epsilon = \frac{BC}{AC} = \frac{3}{5}$ $\cos = \frac{\text{جانب مجاور}}{\text{مربع}}$ $\frac{3}{5} = \frac{y}{10}$ $y = \frac{10 \times 3}{5} = 6$ $AB = 4$ $BC = 3$ $\tan \epsilon = 1$ $\tan = \frac{\text{مقابل}}{\text{جانب مجاور}}$ $1 = \frac{z}{5}$ $z = 5$ $DC = 5$	الف - نامبری ۳ ب - نامبری ۲ 
$\tan x = \frac{1}{3} \quad \text{با نامبری} \rightarrow \sin, \cos \rightarrow - \quad \sin x = ?$ $\tan^2 x + 1 = \frac{1}{\cos^2 x}$ $\frac{1}{9} + 1 = \frac{1}{\cos^2 x}$ $\frac{10}{9} = \frac{1}{\cos^2 x}$ $\cos^2 x = \frac{9}{10}$ $\rightarrow \cos x = \frac{3}{\sqrt{10}}$ $\sin^2 x + \cos^2 x = 1$ $\sin^2 x + \frac{9}{10} = 1$ $\sin^2 x = \frac{1}{10} \rightarrow \sin x = \frac{1}{\sqrt{10}} \times \frac{\sqrt{10}}{\sqrt{10}} = \frac{\sqrt{10}}{10}$	