

۱) $27^\circ = \pi \text{ rad}$ $\frac{27}{180} = \frac{\pi}{\pi} \rightarrow \pi = \frac{3\pi}{2}$ $\frac{D}{180} = \frac{G}{200} = \frac{Rad}{\pi}$

۲) $125^\circ = \pi \text{ rad}$ $\frac{125}{180} = \frac{\pi}{\pi} \rightarrow \pi = \frac{25\pi}{36}$

۳) $\frac{5\pi}{12} \text{ rad} = \pi$ $\frac{5\pi}{12} = \frac{\pi}{180} \rightarrow \frac{5}{12} = \frac{\pi}{180} \rightarrow \pi = 75^\circ$

۴) $\frac{4\pi}{9} \text{ rad} = \pi$ $\frac{4\pi}{9} = \frac{\pi}{180} \rightarrow \frac{4}{9} = \frac{\pi}{180} \rightarrow \pi = 80^\circ$

زاویه‌های راضی مثلث 10° , $\frac{125a}{9}$, $\frac{a\pi}{180}$ $\rightarrow$ $\frac{125a}{9} = \frac{D}{180} \rightarrow \frac{125}{9}a = \frac{D}{9}$

$D = 125a$

$\frac{a\pi}{180} = \frac{D}{180} \rightarrow \frac{a}{180} = \frac{D}{180}$

$D = 125a$

$10^\circ + 125a + 125a = 180$

$45a = 180 \rightarrow a = 4^\circ$

الف) $\cos 40^\circ \cos 30^\circ - \sin 40^\circ \sin 30^\circ - \tan 45^\circ + \cot 45^\circ$

$(\frac{1}{2} \times \frac{\sqrt{3}}{2}) - (\frac{\sqrt{3}}{2} \times \frac{1}{2}) - 1 + 1 = 1$

ب) $\frac{\tan^2 30^\circ + \tan^2 45^\circ + \tan^2 60^\circ}{\cot 30^\circ - \cot 60^\circ} = \frac{(\frac{\sqrt{3}}{3})^2 + 1 + (\sqrt{3})^2}{\sqrt{3} - \frac{\sqrt{3}}{3}} = \frac{\frac{4}{3} + 1 + 3}{\frac{2\sqrt{3}}{3}} = \frac{13}{2\sqrt{3}}$

$-\sin 30^\circ \cos 40^\circ + \cos 30^\circ \sin 40^\circ = \sin^2 \theta (-\frac{1}{2} \times \frac{1}{2}) + (\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2}) = -\frac{1}{4} + \frac{3}{4} = \frac{2}{4} = \frac{1}{2} = \sin^2 \theta$

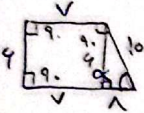
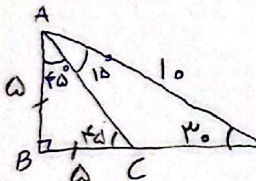
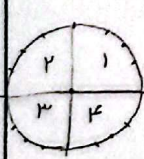
$\theta \rightarrow$ زاویه حاده $\sin \theta = \pm \frac{\sqrt{2}}{2} \rightarrow \theta = 45^\circ$, $\cos = +\frac{\sqrt{2}}{2}$

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

$\frac{\frac{1}{\sin^2 40^\circ} \cos^2 30^\circ}{(1 - \cot^2 40^\circ)^2} = \tan \theta \rightarrow \frac{\frac{1}{\sin^2 40^\circ} \cos^2 30^\circ}{(1 - \cot^2 40^\circ)^2} = \tan \theta \rightarrow \frac{1}{\sin^2 40^\circ} \cos^2 30^\circ = \tan \theta$

$\theta = 40^\circ$

θ را به راد $\rightarrow \frac{1}{3} = \frac{Rad}{\pi} \rightarrow \theta = \frac{\pi}{3}$

$\tan \theta = \omega$ $\frac{3 \sin \theta - \cos \theta}{\sin \theta - 4 \cos \theta}$ $\frac{1\omega}{\sqrt{1+\omega^2}} - \frac{1}{\sqrt{1+\omega^2}} = \frac{1\omega}{\sqrt{1+\omega^2}} \times \frac{\omega + \sqrt{1+\omega^2}}{1} = 1\omega$ $\frac{\omega}{\sqrt{1+\omega^2}} = \frac{4}{\sqrt{1+\omega^2}}$	$\tan^2 \theta = 16 \rightarrow \tan^2 \theta + 1 = \frac{1}{\cos^2 \theta} = 17 \rightarrow \cos^2 \theta = \frac{1}{17}$ $\cos \theta = \frac{1}{\sqrt{17}}$ $\sin^2 \theta + \cos^2 \theta = 1$ $\sin^2 \theta = 1 - \frac{1}{17}$ $\sin^2 \theta = \frac{16}{17}$ $\sin \theta = \frac{4}{\sqrt{17}}$	6
$\sin \alpha = \frac{9}{10}$ $\alpha = 37^\circ$  $\frac{9}{10} = \frac{9}{10} \rightarrow 10 = \sqrt{81+64}$ $S = \frac{(V+15) \times 3}{x} = 44$		7
$\overline{DC} = 2(\sqrt{3}-1)$  $100 = 25 + x^2$ $75 = x^2 \rightarrow x = \sqrt{75} = 5\sqrt{3}$ $5\sqrt{3} = 5 + CD \rightarrow DC = 5\sqrt{3} - 5$		8
تابع سهم (الف)  تابع زوج (ب)		9
$\tan x = \frac{1}{3}$ $\sin x = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$	$1 + \frac{1}{9} = \frac{1}{\cos^2 x}$ $\frac{10}{9} = \frac{1}{\cos^2 x} \rightarrow \cos^2 x = \frac{9}{10} \rightarrow \cos x = \frac{3}{\sqrt{10}} = \frac{3\sqrt{10}}{10}$ $\frac{9}{10} + \sin^2 x = 1 \rightarrow \sin^2 x = \frac{1}{10}$	10