

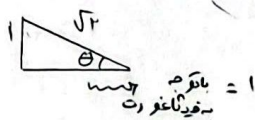
نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۱۴ کلاس:
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الف) $27^\circ = (\pi) \text{ rad} \rightarrow \frac{D}{180} = \frac{R}{\pi} \rightarrow \frac{27}{180} = \frac{R}{\pi} \rightarrow 180R = 27\pi \rightarrow R = \frac{27\pi}{180} \rightarrow R = \frac{3}{20}\pi$
 ب) $125^\circ = (\pi) \text{ rad} \rightarrow \frac{D}{180} = \frac{R}{\pi} \rightarrow \frac{125}{180} = \frac{R}{\pi} \rightarrow 180R = 125\pi \rightarrow R = \frac{125\pi}{180} = \frac{25}{36}\pi$
 ج) $\frac{5\pi}{12} \text{ rad} = (\pi)^\circ \rightarrow \frac{D}{180} = \frac{R}{\pi} \rightarrow \frac{D}{180} = \frac{\frac{5\pi}{12}}{\pi} \rightarrow \frac{D}{180} = \frac{5}{12} \rightarrow 12D = 180 \times 5 \rightarrow D = \frac{180 \times 5}{12} = 75^\circ$
 د) $\frac{\pi}{4} \text{ rad} = (\pi)^\circ \rightarrow \frac{D}{180} = \frac{R}{\pi} \rightarrow \frac{D}{180} = \frac{\frac{\pi}{4}}{\pi} \rightarrow \frac{D}{180} = \frac{1}{4} \rightarrow 4D = 180 \times 1 \rightarrow D = \frac{180 \times 1}{4} = 45^\circ$

$\frac{D}{180} = \frac{R}{\pi} \rightarrow \frac{D}{180} = \frac{\frac{a\pi}{\pi}}{\pi} \rightarrow \frac{D}{180} = \frac{a\pi}{\pi^2} \rightarrow 180D = 180a \rightarrow D = \frac{180a}{180} = 22,5a$
 $\frac{D}{180} = \frac{G}{180} \rightarrow \frac{D}{180} = \frac{12a}{\frac{180}{100}} \rightarrow \frac{D}{180} = \frac{12a \times 100}{180} \rightarrow 100 \times 4 \times D = 12a \times 180 \rightarrow D = \frac{12a \times 180}{100 \times 4} = 12,6a$
 $10a + 22,5a + 12,6a = 180 \rightarrow 45,1a = 180 \rightarrow a = \frac{180}{45,1} \approx 4$

الف) $\cos 40^\circ \cos 30^\circ - \sin 40^\circ \sin 30^\circ - \tan 40^\circ + 2 \cot 40^\circ = \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{2} - 1 + 2 = 1$
 $\frac{1}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{2}}{4}$
 ب) $\frac{\tan^2 30^\circ + \tan^2 40^\circ + \tan^2 50^\circ}{\cot 30^\circ - \cot 40^\circ} = \frac{\frac{1}{3} + 1 + 3}{\sqrt{3} - \frac{\sqrt{3}}{3}} = \frac{1+3+9}{\frac{3\sqrt{3}-\sqrt{3}}{3}} = \frac{13}{\frac{2\sqrt{3}}{3}} = \frac{13 \times 3}{2\sqrt{3}} = \frac{39}{2\sqrt{3}} = \frac{13\sqrt{3}}{2}$

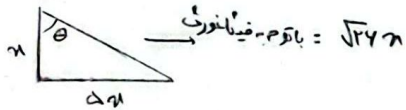
$-\sin 30^\circ \cos 40^\circ + \cos 30^\circ \sin 40^\circ = \sin^2 \theta$
 $-\frac{1}{2} \times \frac{1}{2} = -\frac{1}{4} + \frac{\sqrt{3}}{2} \times \frac{\sqrt{2}}{2} = \frac{\sqrt{6}}{4} \rightarrow -\frac{1}{4} + \frac{\sqrt{6}}{4} = \frac{\sqrt{6}-1}{4} = \sin^2 \theta \rightarrow \sin \theta = \frac{\sqrt{\sqrt{6}-1}}{2}$



$\tan \theta = \frac{1}{1} = 1$

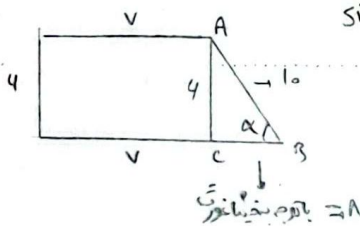
$\frac{2 \tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 40^\circ) 2} = \frac{2 \times \frac{\sqrt{3}}{3} (1 - \frac{1}{3})}{1 - \frac{3}{4}} = \frac{\frac{2\sqrt{3}}{3} \times \frac{2}{3}}{\frac{1}{4}} = \frac{\frac{4\sqrt{3}}{9}}{\frac{1}{4}} = \frac{4\sqrt{3}}{9} \times 4 = \frac{16\sqrt{3}}{9} = \sqrt{3} = \tan \theta$
 $\frac{D}{180} = \frac{R}{\pi} \rightarrow \frac{40}{180} = \frac{R}{\pi} \rightarrow 180R = 40\pi \rightarrow R = \frac{40\pi}{180} = \frac{2\pi}{9}$
 چون $\theta = 40^\circ$

$$\tan \theta = \Delta \rightarrow \frac{\text{مقابل}}{\text{جانب}} = \frac{\Delta x}{x}$$



$$\frac{1 \sin \theta - \cos \theta}{\sin \theta - \cos \theta} = \frac{1 \times \frac{\Delta x}{\sqrt{1+4}x} - \frac{x}{\sqrt{1+4}x}}{\frac{\Delta x}{\sqrt{1+4}x} - 1 \times \frac{x}{\sqrt{1+4}x}} = \frac{\frac{1}{\sqrt{1+4}}}{\frac{1}{\sqrt{1+4}}} = \frac{1}{\sqrt{1+4}} = \frac{1}{\sqrt{5}}$$

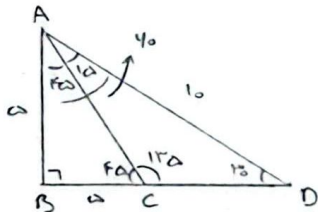
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$$\sin \alpha = \frac{4}{10} = \frac{AC}{AB} \rightarrow AB = 10$$

$$4 + 1 + 1 + 10 = 16$$

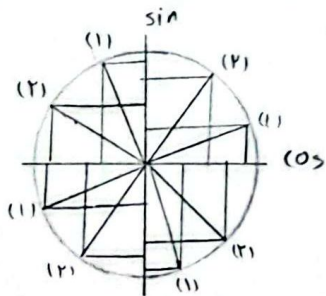
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$$BD = \frac{\sqrt{10}}{1} \times 10 = 2\sqrt{10}$$

$$CD = BD - BC \rightarrow 2\sqrt{10} - a = a(\sqrt{10} - 1)$$

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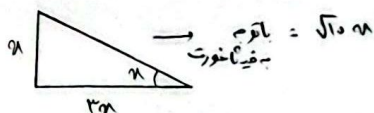


$$\text{الميل} \leftarrow \begin{cases} \uparrow \cos \theta / \downarrow \sin \theta / \uparrow \theta \\ \downarrow \cos \theta, \sin \theta / \uparrow \theta \end{cases}$$

$$\text{الميل} \leftarrow \begin{cases} \downarrow \cos \theta, \sin \theta / \uparrow \theta \\ \uparrow \cos \theta, \sin \theta / \downarrow \theta \end{cases}$$

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$$\tan \alpha = \frac{1}{1} = \frac{\text{مقابل}}{\text{جانب}} = \frac{1x}{1x}$$



$$\text{الميل} \rightarrow \sin \theta \Rightarrow \sin \alpha = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

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