

الف) $۲۷ \times \frac{\pi}{۱۸۰} = \frac{۲۷\pi}{۱۸۰} = \frac{۹\pi}{۶۰} = \frac{۳\pi}{۲۰}$

ب) $۱۲۵ \times \frac{\pi}{۱۸۰} = \frac{۱۲۵\pi}{۳۶}$

ج) $\frac{۵\pi}{۱۲} \times \frac{۱۸۰}{\pi} = ۷۵^\circ$

د) $\frac{۴\pi}{۳} \times \frac{۱۸۰}{\pi} = ۸۰^\circ$

(۲) ✓

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$\frac{\frac{۱۲۵a}{9}}{\frac{۲۰۰}{1}} = \frac{D}{۱۸۰} \Rightarrow D = \frac{\frac{۱۲۵a}{9} \times \frac{۱۸۰}{۲۰۰}}{\frac{۲۰۰}{1}} = \frac{۱۲۵a \times \frac{1}{2}}{\frac{۲۰۰}{1}} = \frac{۱۲۵a}{1} = ۱۲,۵a^\circ$

۲

$\frac{a\pi}{\frac{\pi}{2}} \times \frac{۱۸۰}{\pi} = ۲۲,۵a$

$۱۲,۵a + ۲۲,۵a + ۱۰a = ۱۸۰^\circ$
 $۴۵a = ۱۸۰ \Rightarrow a = 4^\circ$

(۲) ✓

الف) $\left(\frac{1}{r} \times \frac{\sqrt{r}}{r}\right) - \left(\frac{\sqrt{r}}{r} \times \frac{1}{r}\right) - (1+r) = \infty$

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ب) $\frac{\frac{1}{r} + 1 + r}{\frac{1}{r} - \frac{1}{\sqrt{r}}} = \frac{r \cdot \frac{1}{r}}{\frac{r}{\sqrt{r}} - \frac{1}{\sqrt{r}}} = \frac{\frac{1r}{r}}{\frac{r-1}{\sqrt{r}}} = \frac{\frac{1r}{r}}{\frac{r-1}{\sqrt{r}}} = \boxed{\frac{1r}{r\sqrt{r}}}$

(۱,۷۵)

$\left(-\frac{1}{r} \times \frac{1}{r}\right) + \left(\frac{\sqrt{r}}{r} \times \frac{\sqrt{r}}{r}\right) = \sin^2 \theta \Rightarrow \sin^2 \theta = \frac{r}{r} \Rightarrow \sin \theta = \pm \frac{\sqrt{r}}{r}$

$\sin \theta = \frac{1}{r}, \theta < 90^\circ \Rightarrow \theta = 30^\circ$

$\tan 30^\circ = \frac{1}{\sqrt{3}}$

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

(۱,۷۵)

۴

$\frac{r \tan 30^\circ (1 - \tan^2 30^\circ)}{(1 - \cot^2 30^\circ) r} = \frac{r \tan 30^\circ}{(1 - \cot^2 30^\circ)} = \frac{r \times \frac{1}{\sqrt{3}}}{1 - \frac{1}{3}} = \frac{\frac{r}{\sqrt{3}}}{\frac{2}{3}} = \frac{r}{\sqrt{3}}$

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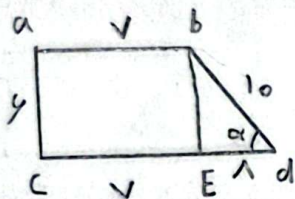
$= \frac{r}{\sqrt{3}} = \frac{r\sqrt{3}}{3} = \sqrt{3} \Rightarrow \tan \theta = \sqrt{3} \Rightarrow \tan \theta = \sqrt{3}, \theta < 90^\circ$

$\frac{r}{\sqrt{3}} = \frac{r\sqrt{3}}{3} \Rightarrow \theta = 60^\circ$

(۱,۷۵)

$$\tan = \frac{\sin}{\cos} \Rightarrow \sin = \tan \times \cos$$

$$\frac{r \sin \theta - \cos \theta}{\sin \theta - f \cos \theta} = \frac{r \tan \theta \times \cos \theta - \cos \theta}{\tan \theta \times \cos \theta - f \cos \theta} = \frac{1 \Delta \cos \theta - \cos \theta}{\Delta \cos \theta - f \cos \theta} = \frac{1 \Delta \cos}{\cos} = 1 \Delta$$



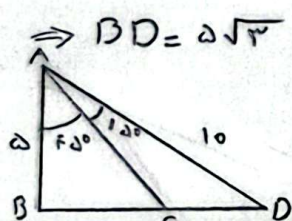
$$\sin \alpha = \frac{y}{10} \Rightarrow \frac{\text{مقابل}}{\text{وتر}} = \frac{y}{10} \Rightarrow \text{وتر} = 10$$

$$bd = 10$$

$$Ed = 10^2 - y^2 = Ed^2 = y^2 \Rightarrow Ed = 8$$

$$\text{محيط} = (r \times v) + y + 8 + 10 = 1 \Delta + y + 8 + 10 = 3 \Delta$$

$$BD \Rightarrow \sin = \frac{\text{مقابل}}{\text{وتر}}, \sin 40^\circ = \frac{\sqrt{3}}{2} \Rightarrow \frac{BD}{AD} = \frac{\sqrt{3}}{2} \Rightarrow \frac{BD}{10} = \frac{\sqrt{3}}{2}$$



$$\Rightarrow BD = 5\sqrt{3} \quad | \quad AD \Rightarrow \cos = \frac{\text{مجاور}}{\text{وتر}} = \frac{AB}{AD}, \cos 40^\circ = \frac{1}{2} \Rightarrow \frac{AB}{10} = \frac{1}{2}$$

$$BC \Rightarrow \tan = \frac{\text{مقابل}}{\text{مجاور}} = \frac{BC}{AB} \Rightarrow \tan 40^\circ = 1 \Rightarrow BC = AB = 5$$

$$BC = 5 \Rightarrow DC = BD - BC = (5\sqrt{3} - 5)$$

$$\text{الف) } \cos \uparrow \Rightarrow 3, 2 \text{ ناصیه}, \sin \downarrow \Rightarrow 3, 2 \text{ ناصیه} \Rightarrow \boxed{3 \text{ ناصیه}}$$

$$\text{ب) } \sin \downarrow \Rightarrow 3, 2, \cos \downarrow \Rightarrow 2 \text{ او} \Rightarrow \boxed{2 \text{ ناصیه}}$$

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

$$\sin^2 + \cos^2 = 1$$

$$\sin^2 + (3 \sin)^2 = 1$$

$$10 \sin^2 = 1 \Rightarrow \sin^2 = \frac{1}{10} \Rightarrow \sin = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$$

هو درنايه سيم است
پس سيم منفي است.

(115)