

نام و نام خانوادگی: ... شماره: ... کلاس: ...

الف) $\frac{rV}{1\lambda_0} = \frac{Rad}{\pi} \rightarrow Rad = \frac{rV\pi}{1\lambda_0} = \frac{10}{100} \pi = \frac{\pi}{10} rad$

ب) $\frac{r\omega}{1\lambda_0} = \frac{Rad}{\pi} \rightarrow Rad = \frac{r\omega\pi}{1\lambda_0} = \frac{10\pi}{100} rad$

ج) $\frac{\omega\pi rad}{\pi} = \frac{D}{1\lambda_0} \rightarrow D = \frac{\omega\pi \times 1\lambda_0}{\pi} = 100^\circ$

د) $\frac{r\omega rad}{\pi} = \frac{D}{1\lambda_0} \rightarrow D = \frac{r\omega \times 1\lambda_0}{\pi} = 100^\circ$

$\frac{D}{1\lambda_0} = \frac{rad}{\pi} = \frac{G}{100} \rightarrow \begin{cases} \frac{120a}{100} = \frac{D}{1\lambda_0} \rightarrow D = \frac{120a \times 1\lambda_0}{100} = (12/10a)^\circ \\ \frac{a\pi}{\pi} = \frac{D}{1\lambda_0} \rightarrow \frac{a\pi \times 1\lambda_0}{\pi} = (12/10a)^\circ \end{cases}$

مجموع زاویه ها $= 100^\circ \rightarrow 12/10a + 12/10a + 10a = 100a$

$\rightarrow 12/10a = 100^\circ \rightarrow a = 10^\circ$

الف) $(\frac{1}{r} \times \frac{r}{r}) - (\frac{r}{r} \times \frac{1}{r}) - 1 + r = 1$

ب) $\frac{(\frac{r}{r})^2 + 1 + (\frac{r}{r})^2}{\sqrt{r} - \frac{r}{r}} = \frac{\frac{r}{r} + 1 + \frac{r}{r}}{\frac{r\sqrt{r} - r}{r}} = \frac{\frac{r}{r}}{\frac{r\sqrt{r} - r}{r}} = \frac{1}{\sqrt{r} - 1} = \frac{1}{\sqrt{r}} \times \frac{\sqrt{r}}{\sqrt{r} - 1} = \frac{1}{\sqrt{r} - 1}$

جواب $\rightarrow \frac{1}{\sqrt{r} - 1}$

$-\frac{1}{r} \times \frac{1}{r} + \frac{r}{r} \times \frac{r}{r} = \sin\theta \rightarrow \sin\theta = -\frac{1}{r} + \frac{r}{r} = \frac{r-1}{r} \rightarrow \frac{r-1}{r} + \cos\theta = 1 \rightarrow \cos\theta = \frac{1}{r}$

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

$\rightarrow \left\{ \begin{array}{l} \sin\theta = \frac{r-1}{r} \rightarrow \sin\theta = \frac{\sqrt{r}}{r} \\ \cos\theta = \frac{1}{r} \rightarrow \cos\theta = \frac{\sqrt{r}}{r} \end{array} \right\} \tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{\frac{\sqrt{r}}{r}}{\frac{\sqrt{r}}{r}} = 1$

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

$\frac{r \times \frac{\sqrt{r}}{r} (1 - (\frac{\sqrt{r}}{r})^2)}{(1 - (\frac{\sqrt{r}}{r})^2)^2} = \frac{\frac{r\sqrt{r}}{r} (1 - \frac{r}{r})}{(1 - \frac{r}{r})^2} = \frac{\frac{r\sqrt{r}}{r}}{(1 - \frac{r}{r})} = \frac{\frac{r\sqrt{r}}{r}}{\frac{r}{r}} = \frac{r\sqrt{r}}{r} \times \frac{r}{r} = \sqrt{r}$

$\tan\theta = \sqrt{r} \rightarrow \theta = 45^\circ \rightarrow \theta = \frac{\pi}{4}$

$$\frac{\sin \theta}{\cos \theta} = \omega \rightarrow \sin \theta = \omega \cos \theta \rightarrow \sin^2 \theta + \cos^2 \theta = 1 \rightarrow \omega^2 \cos^2 \theta + \cos^2 \theta = 1$$

$$\rightarrow \cos^2 \theta = \frac{1}{1 + \omega^2} \rightarrow \cos \theta = \frac{1}{\sqrt{1 + \omega^2}} \rightarrow \sin \theta = \frac{\omega}{\sqrt{1 + \omega^2}} = \frac{\omega \sqrt{19}}{\sqrt{20}}$$

$$\cos \theta = \frac{1}{\sqrt{20}} \times \frac{\sqrt{19}}{\sqrt{19}} = \frac{\sqrt{19}}{\sqrt{20}}$$

$$\frac{\frac{\omega \sqrt{19}}{\sqrt{20}} - \frac{\sqrt{19}}{\sqrt{20}}}{\frac{\omega \sqrt{19}}{\sqrt{20}} - \frac{\sqrt{19}}{\sqrt{20}}} = \frac{19\sqrt{19}}{19} \times \frac{19}{\sqrt{19}} = 19$$

$\triangle$ $x=10$ $\sin \alpha = \frac{y}{10} = \frac{y}{x} \rightarrow x=10$
 $y=1$
 $x^2 + y^2 = 10^2 \rightarrow y^2 = 99 \rightarrow y=1$
 مساحت ذوزنقه = $4 + 10 + 1 + 10 = 25$

$D=10^\circ \rightarrow \sin 10^\circ = \frac{1}{10} = \frac{AB}{10} \rightarrow AB=1$ $AB + BD = 10 \rightarrow 1 + BD = 10$
 $\rightarrow BD=9 \rightarrow BD = \sqrt{10} = \omega \sqrt{3}$
 $\tan 60^\circ = 1 \rightarrow \frac{BC}{AB} = 1 \rightarrow BC = AB = 1$
 $BD = BC + DC \rightarrow \omega \sqrt{3} = 1 + DC \rightarrow DC = (\omega \sqrt{3} - 1)$

نامی دوم و سوم $\rightarrow$ کاسی $\sin \theta$ (الف)
 نامی دوم و چهارم $\rightarrow$ کاسی $\cos \theta$ (الف)
 نامی اول و دوم $\rightarrow$ کاسی $\sin \theta$ (ب)
 نامی اول و سوم $\rightarrow$ کاسی $\cos \theta$ (ب)

$\frac{\sin x}{\cos x} = \frac{1}{3} \rightarrow \sin x = \frac{1}{3} \cos x$
 $\sin^2 x + \cos^2 x = 1$
 $\rightarrow \sin^2 x + 9 \sin^2 x = 1 \rightarrow 10 \sin^2 x = 1 \rightarrow \sin^2 x = \frac{1}{10}$
 $\rightarrow \sin x = \pm \frac{1}{\sqrt{10}} = \pm \frac{\sqrt{10}}{10}$
 $\sin x = -\frac{\sqrt{10}}{10}$