

۱۴)

الف) $\tan \frac{\pi}{4} + \sin \frac{\pi}{4} \cos \frac{\pi}{4} \Rightarrow -1 + \left(\frac{-\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} \right) \Rightarrow -1 - \frac{1}{2} \checkmark$

(۲)

ب) $\tan \frac{\pi}{4} \sin \frac{\pi}{4} + \cos \frac{\pi}{4} \Rightarrow \left(\frac{-\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} \right) + \left(\frac{1}{2} \right) \Rightarrow 0 \checkmark$

۲۴)

$\cot = r \rightarrow \frac{\cos}{\sin} = r \rightarrow r \sin = \cos$

(۲)

$\frac{12 \sin x - \sin x}{12 \sin x + \sin x} \Rightarrow \frac{11 \sin x}{13 \sin x} = \frac{11}{13} \checkmark$

۳۴)

$\sin = r \cos$

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

(۲)

مع لیس $\begin{cases} \cos = - \\ \sin = - \end{cases}$

$(r \cos)^2 + \cos^2 = 1$

$r^2 \cos^2 + \cos^2 = 1 \rightarrow \omega \cos^2 = 1$

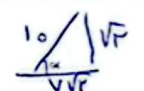
$\cos^2 = \frac{1}{\omega} \checkmark$

$\cos = \frac{1}{\sqrt{\omega}} \rightarrow \frac{\sqrt{\omega}}{\omega} \checkmark$

۴۴)

$\cos(A+B) = \cos A \cos B - \sin A \sin B$

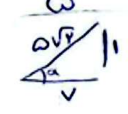
$\cos \frac{11\pi}{4} \rightarrow \cos \frac{\pi}{4}$



$\cos\left(\frac{\pi}{4} + \alpha\right) = \left(\frac{-\sqrt{2}}{2}\right)\left(\frac{-\sqrt{2}}{10}\right) - \left(\frac{\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right) = \frac{2}{10} - \frac{2}{10} = 0 \checkmark$

الف) (۲)

$\sin \frac{\pi}{4} \Rightarrow \sin A \cos B + \sin B \cos A$



$\sin \frac{\pi}{4} = \sin \frac{\pi}{4}$

$\sin\left(\frac{\pi}{4} + \alpha\right) = \left(\frac{-\sqrt{2}}{2}\right)\left(\frac{\sqrt{2}}{10}\right) + \left(\frac{1}{\sqrt{2}}\right)\left(\frac{-\sqrt{2}}{2}\right) = \frac{-2}{10} - \frac{1}{10} = \frac{-3}{10} \checkmark$

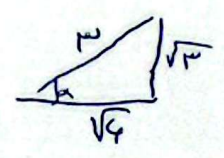
۵۴)

$r \sin^2 + \cos^2 = \frac{r}{r} \rightarrow \sin^2 + \cos^2 = \frac{r}{r} - \sin^2 \rightarrow 1 = \frac{r}{r} - \sin^2 \Rightarrow \sin^2 = \frac{1}{r}$

$\sin = \frac{1}{\sqrt{r}} \cdot \frac{\sqrt{r}}{r} \checkmark$

$\tan^2 = \left(\frac{\sin^2}{\cos^2}\right) \rightarrow \frac{1}{r} = \left(\frac{1}{r}\right) \checkmark$

$\sin = \frac{1}{\sqrt{r}}$
 $\cos = \frac{\sqrt{r}}{r}$



9)

$$\frac{1}{r} \times 4 \times \sqrt{r} \times \sin \alpha = \frac{r}{\omega}$$

$$4\sqrt{r} \times \sin \alpha = \frac{r}{\omega} \rightarrow$$

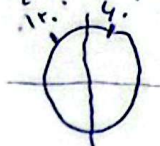
$$\frac{4}{\frac{r}{\sqrt{r}}} = \sin \alpha \rightarrow$$

$$\frac{4\sqrt{r}}{r} = \frac{\sqrt{r}}{\omega} \rightarrow$$

$$\frac{4}{\sqrt{r}} = \frac{1}{\omega}$$

$$\frac{4}{\sqrt{r}} = \frac{1}{\omega}$$

✓



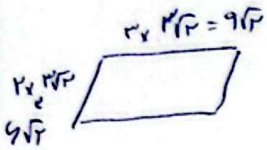
(2)

10)

$$r \times r \times \frac{\sin 120^\circ}{r} = \omega \rightarrow$$

$$1 \cdot 1 = 4\omega^2 \rightarrow \omega^2 = \frac{1}{4} \rightarrow \omega = \frac{1}{2}$$

(2)



$$(r \times r) + (r \times r) = 1 \times 1 + 1 \times 1 = 2 \times 1 = 2$$

✓

11)

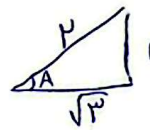
$$ABC = \omega \times v \times \frac{\sin A}{r} = \frac{r\omega}{r} \sin A \rightarrow v\omega \sin A$$

$$1 \times \omega - 1 \times \omega = 2\omega$$

$$ADE = r \times v \times \frac{\sin A}{r} = \frac{r\omega}{r} \sin A$$

$$v\omega \sin A = 1 \times \omega$$

(2)



$$\sin A = \frac{1}{2}$$

$$\tan A = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

✓

12)

$$\frac{BN}{BC} = \frac{r}{\omega}$$

$$CN + NB = BC$$

مساحت ها با اضلاع بستگی دارد چون ارتفاع ها برابر است پس نسبت مساحت ها برابر است نسبت مساحت ها با اضلاع است

$$ABC = 3 BMN \rightarrow$$

$$\frac{BMN}{ABC} = \frac{BM}{AB} \times \frac{BN}{BC} = \frac{r}{\omega} = \frac{1}{3}$$

(2)

$$\frac{BM}{AB} = \frac{\omega}{3} \Rightarrow BM = \frac{\omega}{3}$$

$$AM = 1 - BM = \frac{2}{3}$$

$$\frac{BM}{AM} = \frac{\frac{\omega}{3}}{\frac{2}{3}} = \frac{\omega}{2}$$

✓

13)

$$\frac{|\sin \alpha|}{\cos \alpha} = -\frac{1}{\cos \alpha} \rightarrow$$

$$\frac{|\sin \alpha|}{\cos \alpha} = \frac{-\sin \alpha}{\cos \alpha} \rightarrow$$

$$|\sin \alpha| = -\sin \alpha$$

(2)

sin منفی
sin < 0

$$\frac{1}{\sqrt{\cos^2 \alpha}} - \tan \alpha = \frac{1 + \sin \alpha}{\cos \alpha} = \frac{1}{\cos \alpha} - \frac{\sin \alpha}{\cos \alpha} = \frac{1 + \sin \alpha}{\cos \alpha} \rightarrow 1 - \sin \alpha$$

در اینجا هم قرار دارد. $\cos < 0$ (منفی) $(1 - \sin)$ مثبت و $1 + \sin$ مثبت و $\sin$ منفی است