

سوال ۱

$$\begin{aligned} \text{الف) } \tan \frac{11\pi}{6} + \sin \frac{13\pi}{6} \cos \frac{13\pi}{6} \\ \tan \left(2\pi + \frac{5\pi}{6} \right) + \sin \left(2\pi + \frac{5\pi}{6} \right) \cos \left(2\pi + \frac{5\pi}{6} \right) \\ -1 + \left(\frac{\sqrt{3}}{2} \times \frac{\sqrt{3}}{2} \right) = \frac{1}{2} - 1 = \boxed{-\frac{1}{2}} \end{aligned}$$

$$\begin{aligned} \text{ب) } \tan \frac{11\pi}{6} \sin \frac{11\pi}{6} + \cos \frac{11\pi}{6} \\ \tan \left(2\pi + \frac{5\pi}{6} \right) \sin \left(2\pi + \frac{5\pi}{6} \right) + \cos \left(2\pi + \frac{5\pi}{6} \right) \\ \left(-\frac{\sqrt{3}}{2} \right) \times \left(-\frac{\sqrt{3}}{2} \right) + \frac{1}{2} = \textcircled{0} \\ -\frac{1}{2} \end{aligned}$$

سوال ۲

$$\begin{aligned} \cot x = f \rightarrow \frac{r \cos x - \sin x}{\cos x + \sin x} = \frac{r \cot x - 1}{r \cot x + 1} = \frac{12 - 1}{12 + 1} = \textcircled{\frac{11}{13}} \\ \frac{\cos x}{\sin x} = f \end{aligned}$$

سوال ۳

$$\begin{aligned} \sin \alpha = r \cos \alpha \rightarrow \cos \alpha = ? \\ \frac{\sin \alpha}{\cos \alpha} = r \Rightarrow \tan \alpha = r \\ \Rightarrow \cos \alpha = \frac{1}{\sqrt{1+r^2}} = \frac{\sqrt{a}}{\omega} \\ \Rightarrow \sin \alpha = \frac{r}{\sqrt{1+r^2}} = \frac{\sqrt{a}}{\omega} \end{aligned}$$

سوال ۴

$$\begin{aligned} \text{الف) } \sin \alpha = \frac{\sqrt{r}}{1} \rightarrow \cos \left(\frac{11\pi}{6} + \alpha \right) \\ 2\pi + \frac{5\pi}{6} = \frac{\sqrt{r}}{1} \end{aligned}$$

$$\cos \alpha = -\frac{\sqrt{a}}{1} = -\frac{\sqrt{r}}{1}$$

$$\cos \left(-\frac{\sqrt{r}}{1} - \frac{\sqrt{r}}{1} \right) = \frac{-\sqrt{r}}{1} - \frac{\sqrt{r}}{1} = \frac{-2\sqrt{r}}{1} = \textcircled{-\frac{2\sqrt{r}}{1}}$$

$$\begin{aligned} \text{ب) } \tan \alpha = \frac{1}{v} \rightarrow \sin \left(\frac{13\pi}{6} + \alpha \right) \\ 2\pi + \frac{5\pi}{6} = \frac{1}{v} \end{aligned}$$

$$\sin \alpha = \frac{1}{\sqrt{1+\frac{1}{v^2}}} = \frac{\sqrt{a}}{a} = \frac{\sqrt{r}}{1}$$

$$\sin \left(\frac{\sqrt{r}}{1} + \frac{\sqrt{r}}{1} \right) = \frac{\sqrt{r}}{1} + \frac{\sqrt{r}}{1} = \frac{2\sqrt{r}}{1} = \textcircled{\frac{2\sqrt{r}}{1}}$$

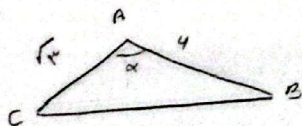
سوال ۵

$$r \sin^2 x + \cos^2 x = \frac{r}{4} \rightarrow \tan^2 x \Rightarrow \frac{r}{4} + \cos^2 x = \frac{r}{4} \Rightarrow \cos^2 x = \frac{r}{4}$$

$$\sin^2 x + \sin^2 x + \cos^2 x = \frac{r}{4} \Rightarrow \sin^2 x + 1 = \frac{r}{4} \Rightarrow \sin^2 x = \frac{1}{4}$$

$$\tan^2 x = \frac{\sin^2 x}{\cos^2 x} = \frac{\frac{1}{4}}{\frac{r}{4}} = \boxed{\frac{1}{r}}$$

سوال ۶



$$S_{\Delta} = \frac{1}{2} (AB \cdot AC) \cdot \sin \alpha \Rightarrow \frac{1}{2} \times 4 \times r \times \sin \alpha = \frac{r}{2}$$

$$\sin \alpha = \frac{r}{4r} = \frac{1}{4} = \frac{\sqrt{r}}{r} \Rightarrow \alpha = 9^\circ \text{ or } \alpha = 17^\circ \textcircled{2}$$

