

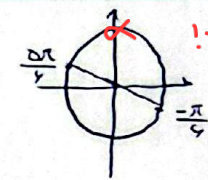
$$\cot \alpha = \frac{\cos \alpha}{\sqrt{1-\cos^2 \alpha}} \xrightarrow{1-\cos^2 \alpha = \sin^2 \alpha} \frac{\cos \alpha}{\sqrt{\sin^2 \alpha}} = \frac{\cos \alpha}{|\sin \alpha|} \Rightarrow \cot \alpha = \frac{\cos \alpha}{\sin \alpha} \rightarrow \alpha \rightarrow \text{نحیه ۱ یا ۲} \quad (1)$$

نحیه ۱:  $\alpha \rightarrow 1$  اثر:  $\frac{1}{\sqrt{\cos^2 \alpha}} - \frac{1}{\cot \alpha} = \frac{1}{|\cos \alpha|} - \frac{\sin \alpha}{\cos \alpha} = \frac{1-\sin \alpha}{\cos \alpha} = \frac{1-\sin \alpha}{|\cos \alpha|} \checkmark$  نحیه ۱ است

نحیه ۲:  $\alpha \rightarrow 2$  اثر:  $\frac{1}{|\cos \alpha|} - \frac{\sin \alpha}{\cos \alpha} = \frac{1-\sin \alpha}{\cos \alpha} \neq \frac{1-\sin \alpha}{-\cos \alpha} \rightarrow X$  نحیه دوم نمی تواند باشد

جواب: نحیه اول  $\alpha$

$\sin r\alpha = \frac{m-1}{r}$   $-\frac{\pi}{12} < \alpha < \frac{5\pi}{12}$   $-\frac{\pi}{4} < r\alpha < \frac{5\pi}{4}$  رقت!



$-\frac{1}{2} < \sin r\alpha < 1$

$-\frac{1}{r} < \frac{m-1}{r} < 1$

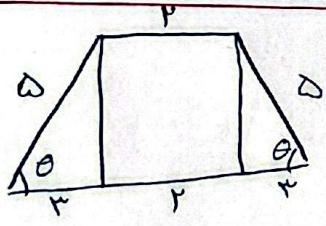
جواب:  $m = (-1, 5]$   $\leftarrow$   $-1 < m < 5$   $\leftarrow$   $+$   $-2 < m-1 < 4$   $\leftarrow$   $\times r$

$3\pi < r\alpha < 4\pi \xrightarrow{\div r} \frac{3\pi}{r} < \alpha < \pi$  (2) (3)

$\tan \alpha + \cot \alpha = -3 \rightarrow \frac{\sin \alpha}{\cos \alpha} + \frac{\cos \alpha}{\sin \alpha} = \frac{1}{\sin \alpha \cos \alpha} = -3 \rightarrow \sin \alpha \cos \alpha = -\frac{1}{3}$

$\frac{1}{\sin^2 \alpha + \cos^2 \alpha} = \frac{1}{(\sin \alpha + \cos \alpha)(\sin \alpha - \cos \alpha + \sin \alpha \cos \alpha)} = \frac{1}{(\sin \alpha + \cos \alpha) \times \frac{2}{3}}$  جواب

$(\sin + \cos)^2 = 1 + 2 \sin \cos = 1 - \frac{2}{3} = \frac{1}{3} \Rightarrow \sqrt{\frac{1}{3}}, |\sin + \cos| = \sqrt{\frac{1}{3}}$  نحیه ۱



$5 \times \cos \theta = 5 \times 0.8 = 4$

مساحت  $S = \frac{(p+r) \times 4}{2} = 20$  جواب

ارتفاع =  $\sin \theta \times 5 = 5 \times 0.8 = 4$

$\tan(170^\circ) \tan(-140^\circ) - \sin(170^\circ) \cos(170^\circ)$  (2) (4)

$\tan(\frac{17\pi}{180} + 10^\circ) \times \tan(\pi + 10^\circ) - \sin(4\pi + 10^\circ) \cos(\frac{17\pi}{180} - 10^\circ)$

$(-\cot 10^\circ \times \tan 10^\circ) - (\sin 10^\circ \times -\sin 10^\circ) = -1 + \sin^2 10^\circ = -\cos^2 10^\circ = +k \cos^2 10^\circ$

جواب:  $k = -1$  ✓

$$\sqrt{r} \cos(r \cdot 0^\circ) \sin(r \cdot 2r^\circ) - \sqrt{r} \sin(135^\circ) \cos(10r^\circ)$$

$$\sqrt{r} \cos\left(\frac{r\pi}{4}\right) \sin\left(\frac{r\pi}{4} - r\pi\right) - \sqrt{r} \sin\left(\frac{r\pi}{4}\right) \cos(\pi - r\pi)$$

$$\underbrace{\left(\frac{-\sqrt{r}}{r}\right)}_{\frac{r}{r} \cos r\pi^\circ} \underbrace{\left(-\cos r\pi^\circ\right)}_{\cos r\pi^\circ} + \underbrace{\left(\frac{\sqrt{r}}{r}\right)}_{\cos r\pi^\circ} \underbrace{\left(-\cos r\pi^\circ\right)}_{\cos r\pi^\circ}$$

جواب

$$= \frac{0}{r} \cos r\pi^\circ = \frac{0}{r}$$

$$f(x) = 14 \cos^2(3x) \cos^2(4x) \cos^2(12x) \cos^2(18x)$$

$$f\left(\frac{\pi}{18}\right) = 14 \cos^2\left(\frac{\pi}{18}\right) \cos^2\left(\frac{\pi}{9}\right) \cos^2\left(\frac{\pi}{3}\right) \cos^2\left(\frac{\pi}{6}\right) = 14 \times \cos^2\left(\frac{\pi}{18}\right) \times \frac{r}{4r}$$

$$\frac{r + \sqrt{r}}{r} = \frac{1 + \frac{\sqrt{r}}{r}}{r} = \frac{1 + \cos \frac{\pi}{4}}{r} = \cos^2 \frac{\pi}{18}$$

$$\frac{r + \sqrt{r}}{r} \times \frac{r}{4} = \frac{r + 2\sqrt{r}}{4} \rightarrow \text{جواب}$$

$$\frac{1 - \sin x}{1 + \sin x} = r \rightarrow 1 - \sin x = r + r \sin x \rightarrow 0 \sin x = -r \rightarrow \sin x = \frac{-r}{2}$$

$$\sin x = \frac{r \tan \frac{a}{r}}{1 + \tan^2 \frac{a}{r}} \xrightarrow{\tan \frac{a}{r} = a} \frac{-r}{2} = \frac{ra}{1+a^2} \Rightarrow -ra^2 - r = 1+a^2 \Rightarrow ra^2 + 1 + a + r = 0$$

$$\xrightarrow{\text{مقدار صحيح يا خالصه}} a^2 + 1 + a + r = 0 \rightarrow (a+1)(a+r) = 0$$

$$a = -1 \text{ or } a = -r$$

جواب

فرمول سيني :  $\frac{\sin a}{1 + \cos a} = \frac{1 - \cos a}{\sin a} = \tan \frac{a}{r}$

$$\frac{\sin \theta}{1 - \cos \theta} + \frac{1 + \cos \theta}{\sin \theta} = \cot \frac{\theta}{r} + \cot \frac{\theta}{r} = r \cot \frac{\theta}{r} = k \cot \frac{\theta}{r} \Rightarrow k = r$$

$$\sin a = \frac{r}{10} \rightarrow 1 - \sin^2 a = \cos^2 a = 1 - \frac{r}{100} = \frac{91}{100} = \cos^2 a \rightarrow \cos a = \frac{-\sqrt{r}}{10}$$

$$\cos\left(\frac{11\pi}{4} + a\right) \xrightarrow{\text{بطل كسيني}} \frac{\cos \frac{11\pi}{4}}{\frac{-\sqrt{r}}{r}} \cos a - \frac{\sin \frac{11\pi}{4}}{\frac{\sqrt{r}}{r}} \sin a = \frac{-\sqrt{r}}{r} (\cos a + \sin a)$$

$$\frac{-\sqrt{r}}{r} \times \left(\frac{-\sqrt{r} + r}{10}\right) = \frac{-\sqrt{r} \times -4\sqrt{r}}{r \cdot 10} = \frac{4r}{r \cdot 10} = \frac{4}{10}$$

جواب