

$$\cot \alpha = \frac{\cos \alpha}{\sqrt{1 - \cos^2 \alpha}} = \frac{1}{\sqrt{\cos^2 \alpha}} = \frac{1}{|\cos \alpha|} = \frac{1 - \sin \alpha}{|\cos \alpha|}$$

(1)

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

$$\rightarrow 1 - \cos^2 \alpha = \sin^2 \alpha$$

$$\Rightarrow \cot \alpha = \frac{\cos \alpha}{|\sin \alpha|} \Rightarrow \sin \alpha > 0$$

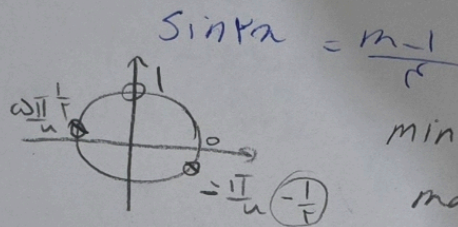
والمثل

(1, 1/2)

ملاحظات

$$-\frac{\pi}{2} < \alpha < \frac{\pi}{2}$$

$$-\frac{\pi}{2} < \alpha < \frac{\pi}{2}$$



$$\sin \alpha = \frac{m-1}{r}$$

$$\min = -\frac{1}{r}$$

$$\max = 1$$

ملاحظات

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

$$-r < m-1 < r$$

$$-1 < m < 1$$

$$\frac{1}{\sin^2 \alpha + \cos^2 \alpha} = ?$$

$$\frac{\pi}{2} < \alpha < \frac{3\pi}{2}, \tan \alpha + \cot \alpha = -\mu$$

$$\frac{\sin \alpha}{\cos \alpha} + \frac{\cos \alpha}{\sin \alpha} = \frac{1}{\sin \alpha \cos \alpha}$$

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

$$\frac{1}{(\sin \alpha + \cos \alpha)} \times \frac{1}{(\cos \alpha + \sin \alpha - \sin \alpha \cos \alpha)}$$

$$= \frac{1}{\frac{\mu}{2}} = \frac{2}{\mu}$$

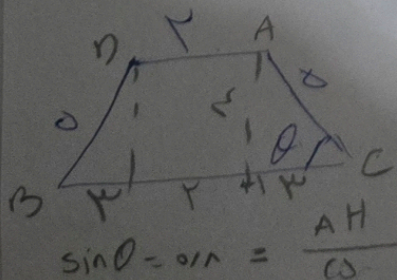
$$(\sin \alpha + \cos \alpha)^2 = \sin^2 \alpha + \cos^2 \alpha + 2 \sin \alpha \cos \alpha$$

$$1 + \mu \times -\frac{1}{\mu} = 1 - \frac{\mu}{\mu} = \frac{1}{\mu}$$

$$\cos \theta = 0,4$$

$$1 - \cos^2 \theta = \sin^2 \theta \rightarrow 1 - 0,16 = 0,84 \rightarrow \sin \theta = 0,91$$

$$\rightarrow S = \frac{1}{2} \times (r + R) = 20$$



$$\sin \theta = 0,91 = \frac{AH}{r} \rightarrow AH = r$$

$$\tan(\pi\alpha) \tan(-10) - \sin(10\alpha) \cos(\pi\alpha)$$

106 (a)

$$k \cos 10\alpha - \tan\left(\frac{\pi}{r} + 10\right) \tan(\pi - 10) - \frac{\sin\left(\frac{4\pi}{r} + 10\right) \cos\left(\frac{\pi}{r} - 10\right)}{\sin(10) \cos(\dots)}$$

$u = ?$

$$10\alpha = \frac{\pi}{r} \cdot \frac{u}{10}$$

$$-1 + \sin^2(10) = -(1 - \sin^2(10)) = -\cos^2 10$$

$$\rightarrow u = -1$$

(3)

$$\frac{A = \sqrt{r} \cos(\pi/10) \sin(\pi/r) - \sqrt{r} \sin(\pi/10) \cos(\pi/r)}{C \cdot \cos(\pi/r)}$$

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

$$-\frac{1}{r} \times \sin\left(\frac{\pi}{r} - \pi\right) - \cos(\pi - \pi/r)$$

$$+ \frac{1}{r} \cos(\pi/r) + C \cdot \cos(\pi/r) = \frac{r}{r} \cos(\pi/r)$$

$$\frac{r \cos(\pi/r)}{C \cos(\pi/r)} = \frac{r}{C}$$

(4)

$$f(n) = 14 \cos^2(\pi n) \cos^2(4n) \cos^2(12n) \cos^2(\pi n)$$

$$f\left(\frac{\pi}{14}\right) = 14 \cos^2\left(\frac{\pi}{14}\right) \cos^2\left(\frac{\pi}{7}\right) \cos^2\left(\frac{\pi}{7}\right) \cos^2\left(\frac{\pi}{14}\right)$$

$$C \cdot \cos^2 \alpha = C \cdot \frac{\cos^2 \alpha}{r} = \frac{r}{r} \times 14 \cos^2\left(\frac{\pi}{14}\right) \cos^2\left(\frac{\pi}{7}\right) \rightarrow r \cos^2\left(\frac{\pi}{14}\right) \cos^2\left(\frac{\pi}{7}\right)$$

(5)

$$\text{Sub } \cos^2 \alpha = r \cos^2 \alpha - 1 \rightarrow \cos^2 \alpha = \frac{\cos^2 \alpha + 1}{r}$$

$$\Rightarrow \left(\frac{r}{r} + 1\right) \times \frac{1}{r} \times r = \frac{r \sqrt{r} + u}{14}$$

(1)

Step

$$\frac{1 - \sin \alpha}{1 + \sin \alpha} = r \quad \tan \frac{\alpha}{2} = ?$$

$$1 - \sin \alpha = r(1 + \sin \alpha)$$

$$\Rightarrow 1 - \frac{a}{10} = \frac{14}{10}$$

$$= \frac{r}{10} \rightarrow \cos \alpha = \frac{r}{10}$$

$$1 - \sin \alpha = r + r \sin \alpha$$

$$-r = r \sin \alpha$$

$$-\frac{r}{r} = \sin \alpha$$

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

$$\text{Sub } \cos \alpha = 1 - r \sin^2 \frac{\alpha}{2}$$

$$\cos \alpha = r \cos^2 \frac{\alpha}{2} - 1$$

$$\sin \Rightarrow \sqrt{\frac{1 - \cos \alpha}{2}} = \sqrt{\frac{1 + r}{2}}$$

$$\cos \Rightarrow \sqrt{\frac{1 + \cos \alpha}{2}} = \sqrt{\frac{1 - r}{2}}$$

