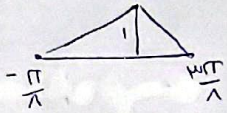
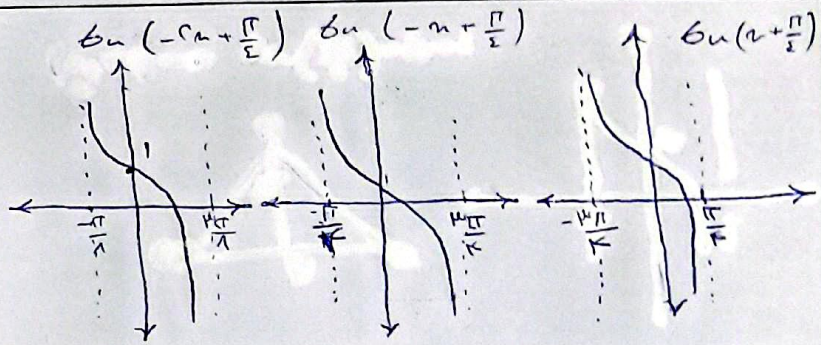


$$y = \sin \left(-2x + \frac{\pi}{4} \right)$$



$$S = \frac{\frac{\pi}{4} + \frac{\pi}{4}}{2} \times 1 = \left(\frac{\pi}{4} \right)$$



۱

$$\left(\frac{r}{\mu}, 0 \right) : \frac{r}{\mu} - (\sin \alpha) \times \frac{r}{\mu} - \frac{1}{k} \cos^2 \alpha = 0 \Rightarrow \frac{1}{k} \cos^2 \alpha + \frac{r}{\mu} \sin \alpha - \frac{r}{\mu} = 0$$

$$\Rightarrow \frac{1}{k} (1 - \sin^2 \alpha) + \frac{r}{\mu} \sin \alpha - \frac{r}{\mu} = 0 \Rightarrow \frac{1}{k} \sin^2 \alpha - \frac{r}{\mu} \sin \alpha + \frac{r}{\mu} = 0$$

$$\times k \Rightarrow \sin^2 \alpha - \frac{r}{\mu} \sin \alpha + \frac{r}{\mu} = 0 \Rightarrow \sin \alpha = \frac{\frac{r}{\mu} \pm \sqrt{\left(\frac{r}{\mu}\right)^2 - 4 \times \frac{r}{\mu}}}{2} \Rightarrow \begin{cases} \sin \alpha = \frac{r}{\mu} \times \\ \sin \alpha = \frac{1}{\mu} \checkmark \end{cases}$$

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

$$1 + \sin^2 \alpha = \frac{1}{\cos^2 \alpha} = \frac{1}{\frac{\mu^2 - 1}{\mu^2}} = \left(\frac{\mu^2}{\mu^2 - 1} \right)$$

۲

مقتضی شرط داده $\sin > 0, \cos < 0$

$$\log^{-1} \sin = \log^{-1} \cos \Rightarrow \sin = -\cos$$

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

$$\cos = -\frac{1}{\sqrt{10}}$$

$$\cos^2 + \sin^2 = 1 \Rightarrow \sin = \frac{3}{\sqrt{10}}$$

۳

$$\sin - \cos = \frac{3}{\sqrt{10}} + \frac{1}{\sqrt{10}} = \frac{4}{\sqrt{10}} = \left(\frac{2\sqrt{10}}{5} \right)$$

$$\sin^k \theta + \cos^r \theta = \frac{r}{\omega} \Rightarrow (1 - \cos^r \theta)^k + \cos^r \theta = \frac{r}{\omega}$$

$$\Rightarrow 1 - \cos^k \theta - r \cos^r \theta + \cos^r \theta = \frac{r}{\omega} \Rightarrow \cos^k \theta = \cos^r \theta - \frac{1}{\omega}$$

$$\sin^r \theta + \cos^k \theta = \sin^r \theta + \cos^r \theta - \frac{1}{\omega} = \left(\frac{r}{\omega} \right)$$

۴

$$0 \leq \cos^r \alpha \leq 1 \Rightarrow 0 \leq r \cos^r \alpha \leq r$$

دور دراز نیست

خارج کسر

اول همواره +

$$\sin \alpha (r + \cos^r \alpha) < 0 \Rightarrow \boxed{\sin \alpha < 0}$$

مطلوبه

$$\frac{\sin^r \alpha}{\cos^r \alpha} - \frac{1}{\cos^r \alpha} > 0 \Rightarrow \frac{-\cos^r \alpha}{\cos^r \alpha} > 0 \Rightarrow \boxed{\cos \alpha < 0}$$

نامیه سوم

$\Rightarrow \cos, \sin$

۵

$$\frac{r}{\sin \alpha} + \frac{w}{\cos \alpha} = 0 \xrightarrow{+ \cos \alpha} r \cot \alpha + w = 0 \Rightarrow \cot \alpha = -\frac{w}{r}$$

$$\Rightarrow \tan \alpha = -\frac{r}{w}$$

$$\tan \alpha + \cot \alpha = -\frac{w}{r} - \frac{r}{w} = \left(\frac{-1w}{r} \right)$$

6

$$\sin(\alpha + \beta) + \sin(\alpha - \beta) = \sin \alpha \cos \beta + \sin \beta \cos \alpha + \sin \alpha \cos \beta - \sin \beta \cos \alpha \Rightarrow 2 \sin \alpha \cos \beta$$

$$\sin \alpha = \cos \beta$$

$$\sqrt{1 + \cos \beta} = \sqrt{2 \cos^2 \frac{\beta}{2}} = \sqrt{2} \cos \frac{\beta}{2}$$

$$\frac{\sqrt{2} \cos \frac{\beta}{2}}{\frac{1}{\sqrt{2}} \sin \frac{\beta}{2}} = \sqrt{2}$$

7

$$(1 - r \sin^2 \alpha) (r \cos^2 \alpha - 1) \left(\frac{1 - \tan^2 \frac{\alpha}{2}}{1 + \tan^2 \frac{\alpha}{2}} \right)$$

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

$$*: \cos \alpha = \frac{1 + \cos \beta}{r} \Rightarrow r \cos^2 \alpha - 1 = \cos \beta$$

$$**: \text{طبق فرض } \rightarrow \cos \beta$$

$$\cos \beta \times \cos \beta \times \cos \alpha \times \frac{\sin \alpha}{\sin \alpha}$$

$$\frac{\frac{1}{r} \sin \beta}{\sin \alpha}$$

$$\frac{\frac{1}{r} \sin \beta}{\sin \alpha}$$

8

$$\sin \alpha = \cos \alpha \Rightarrow \frac{1}{\alpha} \frac{\cos \alpha}{\sin \alpha} = \frac{1}{\alpha} \cot \alpha$$

$$\frac{1}{\alpha} \frac{\sin \alpha}{\sin \alpha}$$

$$\sin = r - r \cos \Rightarrow \sin^2 = r^2 - 1r \cos + 9 \cos^2$$

$$\Rightarrow 1 - \cos^2 = r^2 + 9 \cos^2 - 1r \cos \Rightarrow 10 \cos^2 - 1r \cos = -r^2$$

$$10 \times \left(\frac{1 + \cos 2\alpha}{2} \right) - 1r \cos \alpha = -r^2 \Rightarrow 2 \cos 2\alpha + 2 - 1r \cos \alpha = -r^2$$

$$\Rightarrow 2 \cos 2\alpha - 1r \cos \alpha = -1$$

9

$$\cos \frac{A}{c} = \frac{1 + \cos A}{r} \Rightarrow \frac{1 + \cos (180^\circ - (\hat{B} + \hat{C}))}{r}$$

$$\Rightarrow r \sin \hat{B} \sin \hat{C} = 1 - \cos \hat{B} \cos \hat{C} + \sin \hat{B} \sin \hat{C}$$

$$\Rightarrow \sin \hat{B} + \sin \hat{C} + \cos \hat{B} \cos \hat{C} = 1 \quad \cos (\hat{B} - \hat{C}) = 1 \Rightarrow \hat{B} - \hat{C} = 0$$

$$\hat{B} = 72^\circ \quad \hat{A} = 180^\circ - (72^\circ + 72^\circ) = 36^\circ$$

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