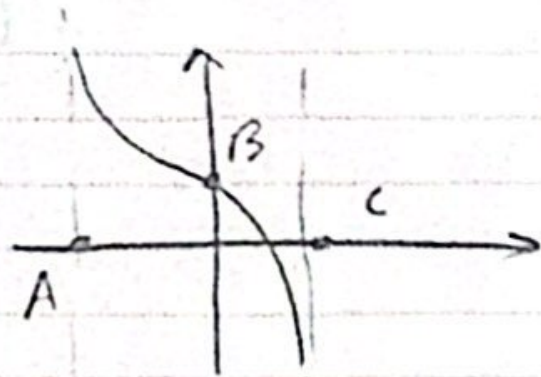


خوداد ۳۹۲

۲۷ رمضان ۱۴۰۹

حل المسألة الأولى، دوازدهم جمادى



$$y = \tan(-2x + \frac{\pi}{4})$$

①

$$\Rightarrow y = \tan(\frac{\pi}{4}) \Rightarrow \boxed{y = 1 \text{ و } B}$$

$$\Rightarrow \frac{\pi}{|b|} = \frac{\pi}{|-2|} = \frac{\pi}{2} \xrightarrow{\text{مساحة مثلث}} \frac{\text{قاعدة} \times \text{ارتفاع}}{2} \Rightarrow \frac{\pi}{2} \times \frac{1}{2} \times \left(\frac{\pi}{4}\right) \checkmark$$

$$n^2 - (\sin \alpha) n - \frac{1}{F} \cos^2 \alpha = 0 \quad n = \frac{1}{F} \quad (۲)$$

$$\left(\frac{1}{F}\right)^2 - \frac{1}{F} \sin \alpha - \frac{1}{F} \cos^2 \alpha = 0 \Rightarrow 14 - 2F \sin \alpha - 9 \cos^2 \alpha = 0$$

$1 - \sin^2 \alpha$

$$\Rightarrow 4 \sin^2 \alpha - 2F \sin \alpha + V = 0 \Rightarrow (-2F)^2 - 4 \times 4 \times V = 16$$

$$\Rightarrow \sin \alpha \nearrow \frac{2F - 16}{16} = \frac{1}{4} \quad \text{و} \quad \searrow \frac{2F + 16}{16}$$

$\searrow \frac{2F + 16}{16} \quad \text{و} \quad \nearrow \frac{2F - 16}{16}$

زیرا $\sin \alpha$ نمی تواند

$$\sin^2 \alpha + \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha + \frac{1}{9} = 1 \Rightarrow \cos^2 \alpha = \frac{8}{9}$$

$$\tan^2 \alpha + 1 = \frac{1}{\cos^2 \alpha} = \frac{9}{8}$$

$$\log \sin \alpha - \log(-\cos \alpha) = \log \frac{\sin \alpha}{-\cos \alpha} = \log -\tan \alpha = \log 3 \quad (۳)$$

$$\Rightarrow \tan \alpha = -3 \Rightarrow 1 + \tan^2 \alpha = \frac{1}{\cos^2 \alpha} \Rightarrow 1 + 9 = \frac{1}{\cos^2 \alpha}$$

$$\Rightarrow \cos \alpha = -\frac{\sqrt{10}}{10} \quad \text{چون } \cos \alpha \text{ منفی است}$$

$$\sin^2 \alpha + \cos^2 \alpha = 1 \rightarrow \sin^2 \alpha = \frac{9}{10} \rightarrow \sin \alpha = \frac{3\sqrt{10}}{10}$$

$$\rightarrow \sin \alpha \times \cos \alpha = \frac{3\sqrt{10}}{10} \times \left(-\frac{\sqrt{10}}{10}\right) = -\frac{3}{10}$$

$$\textcircled{+} \leftarrow -c$$

تکرار به این خاطر انجام دهید که کار خوبی است نه اینکه چون فرستی برای موفقیت به شما می دهد

پنجشنبه

14 June 2018

خرداد ۱۳۹۷

۲۹ رمضان ۱۴۳۹

۲۴

$$\frac{\sin^2 \alpha + \cos^2 \alpha}{1 - \sin^2 \alpha} = \frac{f}{a} \quad (1)$$

$$\Rightarrow \sin^2 \alpha - \sin^2 \alpha + 1 = \frac{f}{a}$$

$$\frac{\cos^2 \alpha + \sin^2 \alpha}{(1 - \sin^2 \alpha)} = \frac{\sin^2 \alpha - \sin^2 \alpha + \sin^2 \alpha + 1}{\sin^2 \alpha - \sin^2 \alpha + 1} = \frac{f}{a}$$

$$\frac{r \sin \alpha + \cos \alpha \sin \alpha}{r - \cos \alpha \sin \alpha} = \frac{\sin \alpha (r + \cos \alpha)}{r \sin \alpha} \Rightarrow \frac{r + \cos \alpha}{r \sin \alpha} < 0 \quad (2)$$

$$\Rightarrow \boxed{\sin \alpha < 0}$$

۲۵

جمعه

$$\sin \alpha \tan \alpha - \frac{1}{\cos \alpha} > 0 \Rightarrow \frac{\sin^2 \alpha - 1}{\cos \alpha} > 0$$

$$\Rightarrow \frac{-\cos^2 \alpha}{\cos \alpha} > 0 \Rightarrow \boxed{\cos \alpha < 0}$$

$$\frac{r}{\sin \alpha} + \frac{r}{\cos \alpha} = \frac{r \cos \alpha + r \sin \alpha}{\sin \alpha \cos \alpha} = 0 \quad (3)$$

$$\Rightarrow r \cos \alpha + r \sin \alpha = 0 \Rightarrow \tan \alpha = \frac{\sin \alpha}{\cos \alpha} = -\frac{r}{r}$$

$$\tan \alpha + \cot \alpha = -\frac{r}{r} = -\frac{r}{r} = \left(\frac{-1 \pm \sqrt{1-4}}{2} \right)$$

۲۶

$$\sqrt{\sin^2 \alpha + 1} \Rightarrow 1 + \sin \alpha = \left(\sin \frac{\alpha}{r} + \cos \frac{\alpha}{r} \right)^r \Rightarrow \sin^2 \alpha + \cos^2 \alpha: \textcircled{V}$$

$$\Rightarrow \sin \alpha + \cos \alpha = \sqrt{2} \sin \left(\alpha + \frac{\pi}{4} \right)$$

$$\rightarrow \sin^2 \alpha + \cos^2 \alpha = \sqrt{2} \sin \alpha = \sqrt{2} \cos \alpha$$

$$\star \sin M + \sin N = 2 \sin \left(\frac{M+N}{2} \right) \cos \left(\frac{M-N}{2} \right)$$

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

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

$$\sin^2 \alpha = \frac{1 - \cos 2\alpha}{2} \Rightarrow 2 \sin^2 \alpha = 1 - \cos 2\alpha: \textcircled{1}$$

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

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

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

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

$$\Rightarrow (\cos 2 \times \cos 2 \times \cos 1) \times \frac{\sin 1}{\sin 1} = \frac{1}{1} \cos 1 = \frac{1}{1} \cos 1$$

خرداد ۱۳۹۷

۳ سوال ۱۴۳۹

۹

$$\sin \alpha + 10 \cos \alpha = 2 \Rightarrow \sin \alpha = 2 - 10 \cos \alpha$$

$$\Rightarrow (\sin \alpha + 10 \cos \alpha)^2 = \sin^2 \alpha + 4 \sin \alpha \cos \alpha + 100 \cos^2 \alpha = 4$$

$$\Rightarrow (1 - \cos^2 \alpha) + 4 \cos^2 \alpha + 100 \cos^2 \alpha = 4$$

$$\Rightarrow 101 \cos^2 \alpha - 10 \cos^2 \alpha = 3 \quad \text{---} \quad - 2$$

$$\Rightarrow 2 \cos^2 \alpha - 10 \cos^2 \alpha = 2(\cos^2 \alpha - 1) - 10 \cos^2 \alpha = 10 \cos^2 \alpha - 10 \cos^2 \alpha - 2 = -2 \quad \checkmark$$

$$\sin B + \sin C = \cos \frac{A}{2} \Rightarrow \sin B + \sin C = \frac{1 + \cos A}{2}$$

۱۰

$$\Rightarrow 2 \sin B \sin C = 1 + \cos A$$

$$\Rightarrow 2 \left(\frac{1}{2} (\cos(B-C) - \cos(B+C)) \right) = \cos A + 1$$

$$\Rightarrow \cos(B-C) - \cos A = \cos A + 1 \Rightarrow \cos(B-C) = 1$$

$$\Rightarrow B - C = 0 \Rightarrow B = C \Rightarrow B = 45^\circ, C = 45^\circ$$

$$\Rightarrow 110 - (C+B) = 110 - 90 = 20^\circ = A \quad \checkmark$$