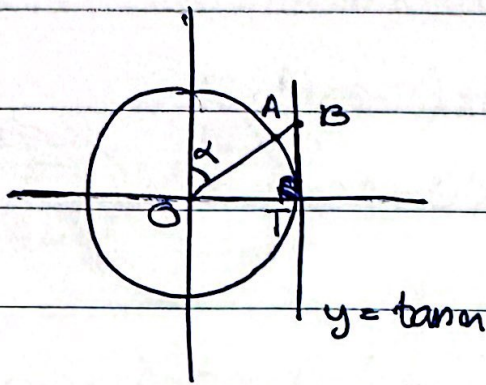


1F Cümler

مریم سوفا دوازدهم A صبح

17, 25

سوال یک



$$A \quad \cos\left(\frac{\pi}{2} - \alpha\right) = \sin \alpha$$

$$\sin\left(\frac{\pi}{2} - \alpha\right) = \cos \alpha$$

$$\tan\left(\frac{\pi}{2} - \alpha\right) = \cot \alpha$$

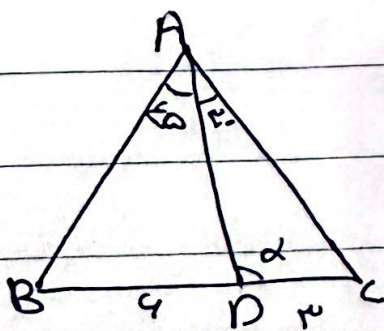
$$\overline{AB} = \sqrt{(\sin \alpha - 1)^2 + (\cos \alpha - \cot \alpha)^2} \rightarrow AB = \frac{\sin \alpha - 1}{\sin \alpha}$$

سوال 2

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

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

$$AB = \sqrt{\frac{(\sin \alpha - 1)^2}{\sin^2 \alpha}} \rightarrow \boxed{AB = \frac{\sin \alpha - 1}{\sin \alpha}} \quad \boxed{AB = \frac{1 - \sin \alpha}{\sin \alpha}}$$



$$\frac{\sqrt{r}}{r} = \frac{\sin \alpha}{\sin(\frac{\pi}{2} - \alpha)} \rightarrow \frac{\sqrt{r}}{r} = \frac{\sin \alpha}{AB} \rightarrow AB = \frac{r \sin \alpha}{\sqrt{r}}$$

$$\frac{1}{r} = \frac{\sin \alpha}{AC} \rightarrow \frac{1}{r} = \frac{\sin \alpha}{AC} \rightarrow AC = r \sin \alpha$$

$$\frac{AB}{AC} = \frac{r \sin \alpha}{\frac{r \sin \alpha}{\sqrt{r}}} = \boxed{\sqrt{r}} \quad \boxed{r}$$

(۳۰)

$$\cos B = \frac{a^2 + c^2 - b^2}{2ac} \rightarrow \cos B = \frac{1 + 1 - \sqrt{2}}{2 \times 1 \times \sqrt{2}} = \frac{2 - \sqrt{2}}{2\sqrt{2}}$$

(۱۱)

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

$$S = \frac{1}{2} \times \sqrt{2} \times \sqrt{2} \times \frac{1+\sqrt{2}}{2\sqrt{2}} = \frac{1+\sqrt{2}}{2} \checkmark$$

(۱۲)

$$A \begin{vmatrix} 1 \\ \sqrt{2} \\ 1 \end{vmatrix} \quad B \begin{vmatrix} -\sqrt{2} \\ 1 \\ 1 \end{vmatrix} \quad C \begin{vmatrix} 0 \\ -1 \\ 1 \end{vmatrix}$$

$$\overline{AB} = \sqrt{\left(\frac{1+\sqrt{2}}{2}\right)^2 + \left(\frac{\sqrt{2}-1}{2}\right)^2} = \sqrt{2}$$

$$\overline{BC} = \sqrt{\left(\frac{\sqrt{2}}{2}\right)^2 + \left(-\frac{\sqrt{2}}{2}\right)^2} = \sqrt{2}$$

$$\overline{AC} = \sqrt{\left(\frac{1}{2}\right)^2 + \left(\frac{\sqrt{2}+1}{2}\right)^2} = \sqrt{1+\sqrt{2}}$$

$$P = \sqrt{2} + \sqrt{2} + \sqrt{1+\sqrt{2}} \checkmark$$

(۱۳)

$$a^2 = b^2 + c^2 - 2bc \cos 60^\circ \rightarrow c^2 - \sqrt{2}bc + b^2 - a^2 = 0$$

$$c = \frac{\sqrt{2}b \pm \sqrt{4a^2 - b^2}}{2} \quad S = \frac{1}{2} \times$$

$$S = \frac{1}{2} \times AB \times AC \times \sin 60^\circ = \frac{1}{2} \times \log_{\sqrt{2}}^{\sqrt{2}} \times \log_{\sqrt{2}}^{\sqrt{2}} \times \frac{1}{2} =$$

$$\frac{1}{2} \times \sqrt{2} \times \sqrt{2} \times \log_{\sqrt{2}}^{\sqrt{2}} \times \log_{\sqrt{2}}^{\sqrt{2}} = \sqrt{2}$$

آبادان

$$r = \cos \alpha \quad r \cos^2 \alpha = \cos^2 \alpha - \sin^2 \alpha (r \sin^2 \alpha + 1) = 1 \quad (\text{سوال 6})$$

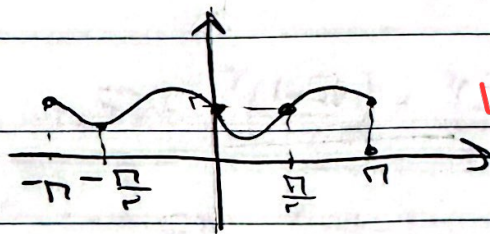
$$\cos^2 \alpha (\underbrace{r \cos^2 \alpha - 1}_{\cos^2 \alpha}) - \sin^2 \alpha (\underbrace{r \sin^2 \alpha + 1}_{-\cos^2 \alpha}) = 1$$

$$\rightarrow \cos^2 \alpha (\cancel{\cos^2 \alpha} + \sin^2 \alpha) = 1 \rightarrow \cos^2 \alpha = 1 \rightarrow \boxed{\sin^2 \alpha = 0}$$

(سوال 9)

$$T = \frac{2\pi}{|b|} = \frac{2\pi}{p} = \pi \quad y = -r \sin n \cos n + r \quad (\text{ج})$$

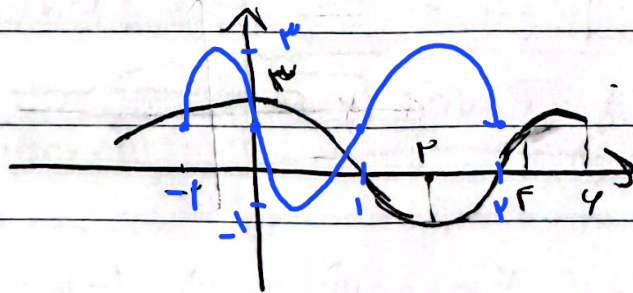
$$= y = -\sin 2n + r$$



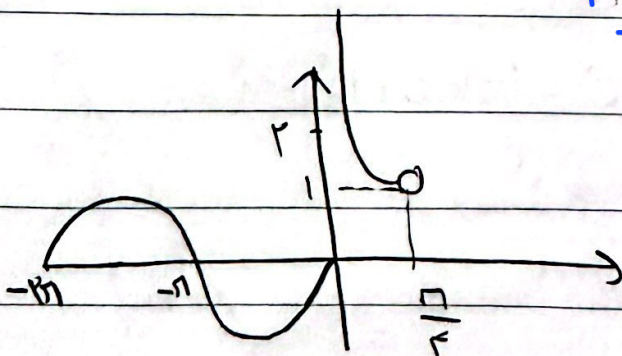
2, 8

$$y = r \cos(n + \frac{1}{p})\pi + 1 = -r \sin n \pi + 1 \quad (\text{د})$$

$$T = \frac{2\pi}{|b|} = \frac{2\pi}{\pi} = 2 \quad \checkmark$$



(سوال 7)



$$R = (-1, +\infty)$$

2

(10) $\frac{1}{2}$

$$\frac{b}{r} \sin(\theta \cos \alpha)$$

$$|\frac{b}{r}| + a = r \rightarrow ra = \varepsilon \rightarrow a = r$$

$$-\frac{|b|}{\epsilon} + a = 0 \quad |b| = \epsilon \rightarrow b = +\epsilon$$

$$T = \frac{n}{\nu} - \frac{n}{\nu_0} = \frac{2n}{\omega} = \frac{2n}{|E_C|} \rightarrow |C| = \frac{\omega}{E} \xrightarrow{C \propto \omega} C = \frac{\omega}{E}$$

$$\frac{bc}{a} = \frac{1 \times \frac{2}{5}}{\frac{1}{5}} = \boxed{2}$$

(9) سوال

بدین ایتام برادر ۳ فرزند و یک وادب پسر منتقل شده پس
و فرزند شده

$$C = -1 \quad a = \sqrt{2}$$

~~$$\frac{r_n}{16} = \frac{r_n}{n} = r \rightarrow f(n) = -r \cos(r_n) - 1 \rightarrow f(n) = -r \cos(r_n) - 1 = 0$$~~

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

$$\begin{aligned} \cos \alpha &= -\frac{1}{\sqrt{r}} & \rightarrow |\tan(\alpha)| &= \boxed{\sqrt{r}} \\ |\sin \alpha| &= \frac{\sqrt{r}}{\sqrt{r}} \end{aligned}$$

$$|\sin \alpha| = \frac{\sqrt{r}}{r}$$

سوال (۱۰)

$$f(-v_1, 0) = f(-v_4 + v_1, 0) = f(v_1, 0)$$

$$f(x) = \begin{cases} -\frac{1}{x} x+1 & 0 < x < 1 \\ x x+1 & -1 < x < 0 \end{cases}$$

$$f(1,0) = \frac{1}{f}$$