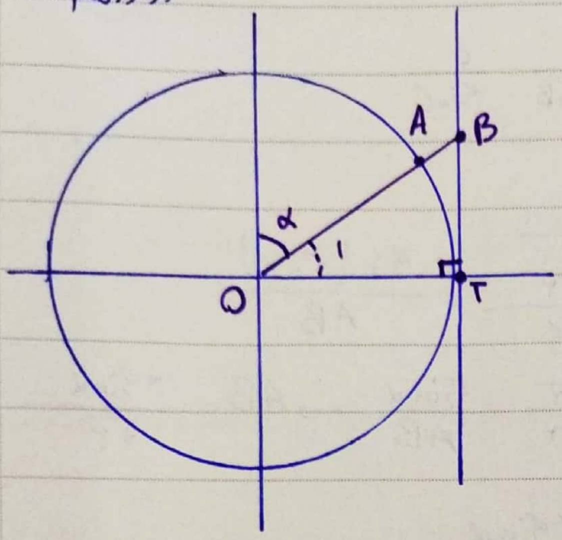
Subject:

Year: Month: Day: Page:( )

دوازدهم A تکلیف ۱۴ سارینا صفوی



(۱

A | $\cos(\frac{\pi}{2}-\alpha) \rightarrow \sin\alpha$

| $\sin(\frac{\pi}{2}-\alpha) \rightarrow \cos\alpha$

B | 1

| $\tan(\frac{\pi}{2}-\alpha) \rightarrow \cot\alpha$

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

$AB = \frac{\sin\alpha - 1}{\sin\alpha}$

$\sin^2\alpha + 1 - 2\sin\alpha$

$\cos\alpha - \cot\alpha = \cos\alpha - \frac{\cos\alpha}{\sin\alpha} \rightarrow \frac{\cos\alpha(\sin\alpha - 1)}{\sin}$

$\xrightarrow{\text{توان ۲}} \frac{\cos^2\alpha(\sin^2 + 1 - 2\sin\alpha)}{\sin^2\alpha}$

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

[redacted]

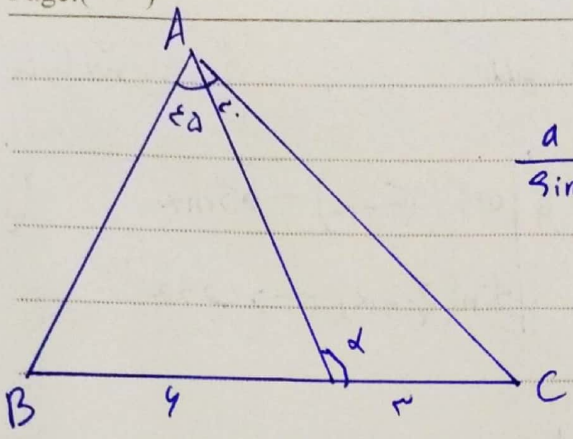
$AB = \sqrt{\frac{(\sin\alpha - 1)^2}{\sin^2}}$

Subject:

Year: Month: Day:

Page:( )

(۲



$$\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$$

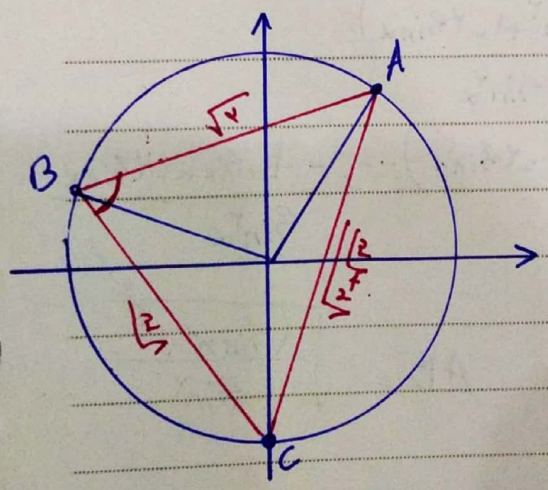
$$\frac{\frac{\sqrt{۲}}{۲}}{۶}=\frac{\sin(\pi-\alpha)}{AB}$$

$$\rightarrow \frac{\sqrt{۲}}{۱۲}=\frac{\sin\alpha}{AB} \rightarrow AB=\frac{۱۲\sin\alpha}{\sqrt{۲}}$$

$$\frac{\frac{۱}{۲}}{۳}=\frac{\sin\alpha}{AC} \rightarrow \frac{۱}{۶}=\frac{\sin\alpha}{AC} \rightarrow AC=۶\sin\alpha$$

$$\frac{AB}{AC}=\frac{\frac{۱۲\sin\alpha}{\sqrt{۲}}}{۶\sin\alpha}=\boxed{\sqrt{۲}}$$

(۳



$$A\left|\frac{۱}{۲}\ \frac{\sqrt{۳}}{۲}\right. \quad B\left|\frac{-\sqrt{۳}}{۲}\ \frac{۱}{۲}\right. \quad C\left|\begin{matrix}۰\\-۱\end{matrix}\right.$$

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$$\overline{AB}=\sqrt{\left(\frac{۱+\sqrt{۳}}{۲}\right)^{۲}+\left(\frac{\sqrt{۳}-۱}{۲}\right)^{۲}}=\sqrt{۲}$$

$$\overline{BC}=\sqrt{\left(\frac{\sqrt{۳}}{۲}\right)^{۲}+\left(-\frac{۳}{۲}\right)^{۲}}=\sqrt{۳}$$

$$AC=\sqrt{\left(\frac{۱}{۲}\right)^{۲}+\left(\frac{\sqrt{۳}+۲}{۲}\right)^{۲}}=\sqrt{۲+\sqrt{۳}}$$

$$\cos B=\frac{a^{۲}+c^{۲}-b^{۲}}{۲ac}$$

$$\rightarrow \cos B=\frac{۲+۳-۲-\sqrt{۳}}{۲\times\sqrt{۳}\times\sqrt{۲}} \rightarrow \frac{۳-\sqrt{۳}}{۲\sqrt{۶}}=\frac{\sqrt{۳}(\sqrt{۳}-۱)}{\sqrt{۳}\times۲\sqrt{۲}} \rightarrow \cos B=\frac{\sqrt{۳}-۱}{۲\sqrt{۲}}$$

$$\sin B=\frac{۱+\sqrt{۳}}{۲\sqrt{۲}}$$

$$S=\frac{۱}{۲}\times\sqrt{۳}\times\sqrt{۲}\times\frac{۱+\sqrt{۳}}{۲\sqrt{۲}}=\boxed{\frac{۳+\sqrt{۳}}{۴}}$$

Sayeh Roshan

Subject:

Year: Month: Day: Page:( )

ب)

$$\overline{AB} + \overline{AC} + \overline{BC} = \sqrt{2} + \sqrt{3} + \sqrt{2+\sqrt{3}}$$

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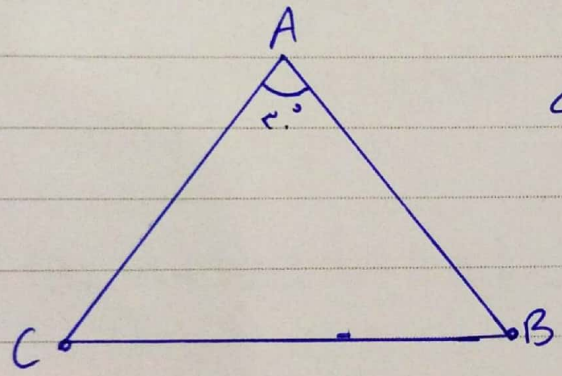


$$S = \frac{1}{2} AC \times BA \times \sin \hat{A}$$

$$\frac{1}{2} \times \log_2^{27} \times \log_3^{16} \times \frac{1}{2}$$

$$\rightarrow \frac{1}{2} \times \frac{3\log_{10}^{3}}{\log_{10}^{2}} \times \frac{4\log_{10}^{2}}{\log_{10}^{3}} \times \frac{1}{2} = \frac{1}{2} \times 3 \times 4 \times \frac{1}{2} = 3$$

Sayeh Roshan

Page:( )

Subject:

Year: Month: Day:

(a

$x = \cos\alpha$

$2\cos^4\alpha - \cos^2\alpha - \sin^2\alpha(2\sin^2\alpha - 1) = 1$

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

$\cos^2\alpha(2\cos^2\alpha - 1) \rightarrow \cos 2\alpha$

$-\sin^2\alpha(2\sin^2\alpha - 1) \rightarrow -\cos 2\alpha$

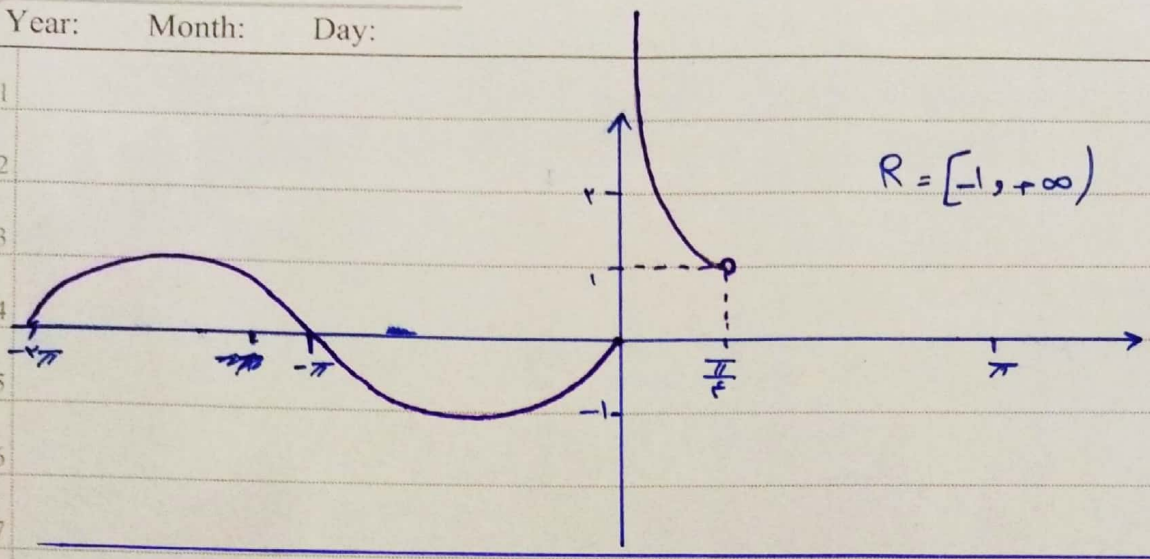
$\cos 2\alpha = 1$

$\boxed{\sin^2\alpha = 0}$

Subject:

Year: Month: Day: Page:( )

(۷



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

(۸

$f(x) = b \sin(cx) \cancel{\cos(cx)\ \cos(۲cx)} + a$

$\cancel{\frac{۱}{۴}\sin(۲cx)}$ $\frac{۱}{۴}\sin(۴cx) \times b$

$f(x) = a + b \times \frac{۱}{۴}\sin(۴cx)$ $\longrightarrow \left|\frac{b}{۴}\right| + a = ۶$; $\left|\frac{b}{۴}\right| + a = ۰$

$a = ۲$

$|b| = ۸$

$b = ۸ \leftarrow \left|\frac{\pi}{۱۰ c}\right| \checkmark$

$T = \frac{\pi}{۲} - \frac{\pi}{۱۰} = \frac{۴\pi}{۱۰} = \frac{۲\pi}{۵} = \frac{۲\pi}{|۴c|} \rightarrow |c| = \frac{۵}{۴}$

$c = \frac{۵}{۴}$

$\frac{bc}{a} = \frac{۸ \times \frac{۵}{۴}}{۲} = ۵$

(۱۰ $M \in \mathbb{Z}$ (I) $f(x) = f(x+۳) \leftarrow$ دوره تناوب $= ۳$ (T)

$f(-۳۴,۵) = f(-۳۴,۵ + ۳M) \rightarrow \in [-۱, ۲)$

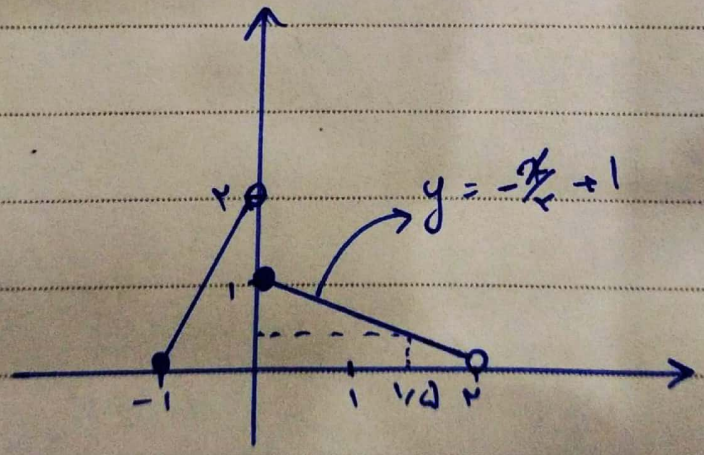
$-۱ \leq -۳۴,۵ + ۳M < ۲ \longrightarrow ۳۳,۵ \leq ۳M < ۳۴,۵$

$\frac{۳۳,۵}{۳} \leq M < \frac{۳۴,۵}{۳}$

$M = ۱۲$

$f(-۳۴,۵ + ۳M) = f(-۳۴,۵ + ۳۶) = f(۱,۵)$

$f(۱,۵) = \frac{۱}{۴}$



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