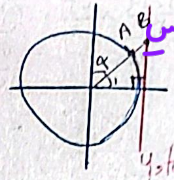
دوازدهم

(1)

۱۴ دفعه ... ترتیب نویسی



9.

عالی (0)

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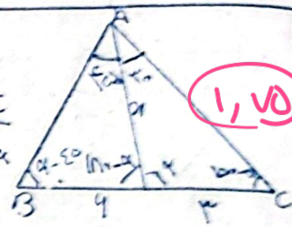
(2)

$\frac{12}{\sqrt{2}} = \frac{6}{\frac{\sqrt{2}}{2}} = \frac{x}{\sin(\ldots)} = \frac{AB}{\sin(\ldots - \alpha)} \quad 6 = \frac{3}{\frac{1}{2}} = \frac{x}{\sin\ldots} = \frac{AC}{\sin\alpha}$



1,75

$\frac{12}{\sqrt{2}} \frac{\sin(\ldots - \alpha)}{\sin\alpha} = AB \qquad 6\sin\alpha = AC$

$\frac{AB}{AC} = \frac{6\sin\alpha}{\frac{12}{\sqrt{2}}\sin\alpha} = \frac{\sqrt{2}}{2}$

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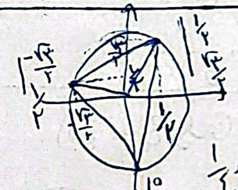
(3)



$\frac{1}{4} + \frac{\sqrt{3}}{2} + 0$

$\frac{1+2\sqrt{3}}{4}$

$\begin{cases} \frac{1}{2} & \frac{\sqrt{3}}{2} \\ \frac{\sqrt{3}}{2} & \frac{1}{2} \\ 0 & 1 \\ \frac{1}{2} & \frac{\sqrt{3}}{2} \end{cases}$

$\frac{3}{4} + 0 + \frac{1}{4}$

$\frac{3+2}{4} = \frac{5}{4}$

$S = \frac{\left|\frac{5}{4} - \frac{1+2\sqrt{3}}{4}\right|}{2}$

$S = \frac{4 - 2\sqrt{3}}{8}$ (1)

(الف) $S = \frac{2-\sqrt{3}}{4}$

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(4)

$\log_3^{14} \times \log_2^{27} \times \frac{1}{2} \times \frac{1}{3} \rightarrow 4\log_3^{2} \times 3\log_2^{3} \times \frac{1}{4} = 3$ (2)

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(5)

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

$-2\sin^4\alpha + \sin^2\alpha \quad 2\sin^2\alpha = 1$

$2\cos^4\alpha - \cos^2\alpha - 2\sin^4\alpha + \sin^2\alpha = 1$

$2\cos^4\alpha - 2\sin^4\alpha - \cos^2\alpha + \sin^2\alpha = 1$

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

$\sin 2\alpha = 0$

$\cos 2\alpha = 1$

(2)

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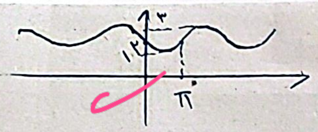
(6)

الف) $-\sin 2x + 2$

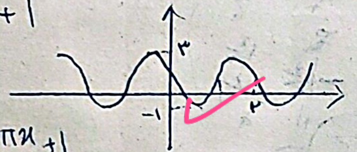
$T = \frac{2\pi}{2} = \pi$



(2)

ب) $2\cos\left(\pi x + \frac{\pi}{2}\right) + 1$

$T = \frac{2\pi}{\pi} = 2 \qquad = -2\sin\pi x + 1$



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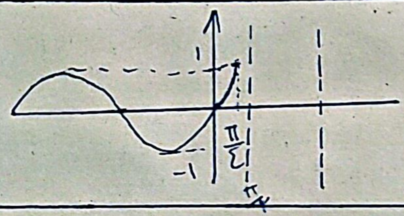
(7)



$R_f = [-1, 1]$

1,28

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(8)

$a + \frac{b}{4}\sin 4cx \qquad \frac{2\pi}{4c} = \frac{4\pi}{10} \rightarrow \frac{1}{4c} = \frac{2}{5} \rightarrow \frac{5}{4} = c$ (2)

$a + \left|\frac{b}{4}\right| = 4$

$a - \left|\frac{b}{4}\right| = 0$

$a = 2 \qquad \left|\frac{b}{4}\right| = 2 \rightarrow b = 8 \rightarrow \frac{2 \times 8 \times \frac{5}{4}}{2} = 5$

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(9)

(الف 2)

$|a| + c = 2$

$-|a| + c = -4 \rightarrow 2c = -2 \qquad |a| = 3$

$c = -1$

$2\sqrt{2}$

$\frac{\sin 2\alpha}{\cos 2\alpha} = \frac{\frac{\sqrt{8}}{3}}{-\frac{1}{3}}$ (2)

$-3\cos 2x - 1 \rightarrow -3\cos 2\alpha - 1 = 0 \rightarrow \cos 2\alpha = -\frac{1}{3} \qquad \sin 2\alpha = 1 - \frac{1}{9} = \frac{8}{9}$

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(10)

$-34,5 \rightarrow (-1) + (3x - 11) + (0,5)$ دو نقطه ... $\rightarrow \frac{x - \ldots}{1,5}$

$y = -\frac{1}{2}x + 1 \rightarrow -\frac{1}{2} \times \frac{3}{2} + 1 = \frac{1}{4}$ (2)

سوال ۱

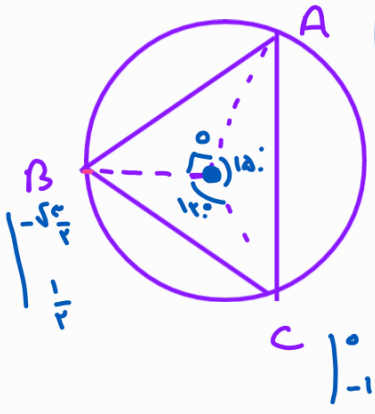
$BT = \tan(\frac{\pi}{2} - \alpha) = \cot\alpha$ — OA و OT شعاع‌های دایره هستند و طول آنها ۱ است.

$OB^2 = OT^2 + BT^2 \rightarrow OB^2 = 1^2 + \cot^2\alpha \rightarrow OB^2 = 1 + \cot^2\alpha$

$OB^2 = \frac{1}{\sin^2\alpha} \rightarrow OB = \frac{1}{|\sin\alpha|} \xrightarrow{\alpha \text{ حاده است}} OB = \frac{1}{\sin\alpha}$

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

سوال ۳



$S_{AOC} = 1 \times 1 \times \frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$

$S_{OAB} = 1 \times 1 \times \frac{1}{2} = \frac{1}{2}$

$S_{OBC} = 1 \times 1 \times \frac{1}{2} \times \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{4}$

$S_{ABC} = \frac{1}{2} + \frac{1}{4} + \frac{\sqrt{3}}{4} = \frac{3+\sqrt{3}}{4}$

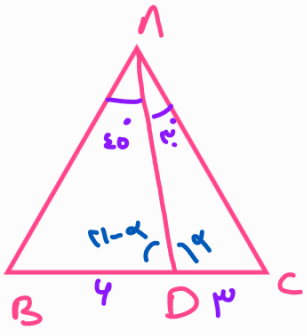
$BC^2 = 1^2 + 1^2 - 1 \times 1 \times 2 \times -\frac{1}{2} = 1 + 1 + 1 = 3 \rightarrow BC = \sqrt{3}$

$AC^2 = 1^2 + 1^2 - 1 \times 1 \times 2 \times -\frac{\sqrt{3}}{2} = 1 + 1 + \sqrt{3} \rightarrow AC = \sqrt{2+\sqrt{3}}$

$AB^2 = 1^2 + 1^2 \rightarrow AB = \sqrt{2}$

$P_{ABC} = \sqrt{2} + \sqrt{3} + \sqrt{2+\sqrt{3}}$

سوال ۲

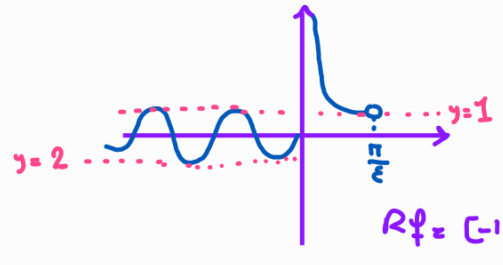


$ADC \rightarrow \frac{\sin\hat{\alpha}}{AC} = \frac{\sin 30}{DC} \rightarrow AC = 4\sin\hat{\alpha}$

$ABD \rightarrow \frac{\sin(\pi - \alpha)}{AB} = \frac{\sin 45}{4} \rightarrow AB = 4\sqrt{2}\sin\hat{\alpha}$

$\frac{AB}{AC} = \frac{4\sqrt{2}\sin\alpha}{4\sin\alpha} = \sqrt{2}$

سوال ۷



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