نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۴ ... کلاس دوازدهم ریاضی A.....

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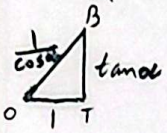
$\sin(\frac{\pi}{2}-\alpha)=\tan\alpha \rightarrow \cos\alpha=\tan\alpha \rightarrow \cos^2\alpha=\sin\alpha$



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

$AB=OB-1=\frac{1}{\cos\alpha}-1=\frac{1-\cos\alpha}{\cos\alpha}=\frac{1-\sqrt{\sin\alpha}}{\sqrt{\sin\alpha}}=\frac{\sqrt{\sin\alpha}-\sin\alpha}{\sin\alpha}$

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

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$\frac{BD}{\sin 45^\circ}=\frac{AD}{\sin\hat{B}}=\frac{AB}{\sin\hat{D}}$ ($\hat{D}=\pi-\alpha$) $\rightarrow \frac{6}{\frac{\sqrt{2}}{2}}=\frac{AB}{\sin\alpha} \rightarrow AB=6\sqrt{2}\sin\alpha$

$\frac{DC}{\sin 30^\circ}=\frac{AD}{\sin\hat{C}}=\frac{AC}{\sin\alpha} \rightarrow \frac{3}{\frac{1}{2}}=\frac{AC}{\sin\alpha} \rightarrow AC=6\sin\alpha$

$\frac{AB}{AC}=\sqrt{2}$ ✓

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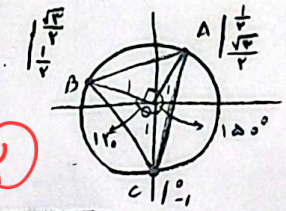
الف) $S_{B\hat{O}C}=\frac{\frac{\sqrt{2}}{2}\times 1}{2}=\frac{\sqrt{2}}{4}=\frac{1}{2}\times BO\times CO\times\sin\alpha$

$S_{A\hat{O}C}=\frac{\frac{1}{2}\times 1}{2}=\frac{1}{4}=\frac{1}{2}\times AO\times CO\times\sin\alpha$

$S_{A\hat{O}B}=\frac{1\times 1}{2}=\frac{1}{2}$

$S_{A\hat{B}C}=\frac{2+\sqrt{3}}{4}$ ✓



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ب) $BC=\sqrt{\frac{2}{4}+\frac{9}{4}}=\sqrt{3}$

$AC=\sqrt{1+1-2\times 1\times 1\times(-\frac{\sqrt{2}}{2})}=\sqrt{2+\sqrt{3}}$

$AB=\sqrt{2}$

محیط $=\sqrt{2}+\sqrt{3}+\sqrt{2+\sqrt{3}}$ ✓

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$BC=3\log_2^3=3t$

$AC=4\log_3^2=\frac{4}{t}$

$BC^2=AC^2+AB^2-2\times AC\times AB\times\frac{\sqrt{3}}{2}$

$9t^2=\frac{16}{t^2}+x^2-\frac{4\sqrt{3}x}{t}=\frac{16+t^2x^2-4\sqrt{3}tx}{t^2}$

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

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

$\sin 2\alpha=\sqrt{1-\cos^2 2\alpha}=0$ ✓

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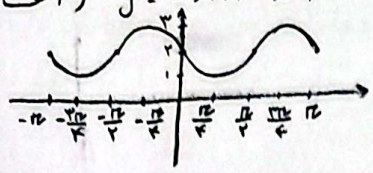
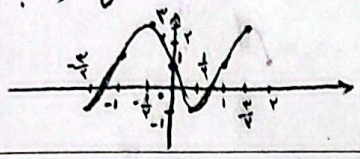
الف) $y = -\sin 2x + 2 \quad [-\pi, \pi] \qquad T = \frac{2\pi}{2} = \pi$



✓

ب) $y = 2\cos(\pi x + \frac{\pi}{2}) + 1 \quad [-\pi, 2\pi] \qquad T = \frac{2\pi}{\pi} = 2$ (۲)



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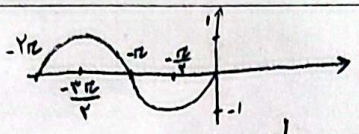
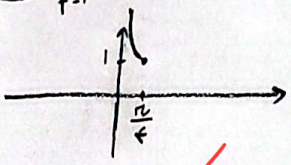
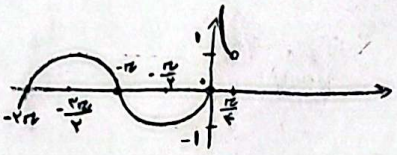
$\sin x \quad x \le 0$



$\cot x \quad 0 < x < \frac{\pi}{4}$



$f(x)$



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(۲)

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

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$f(x) = \frac{b}{2}\sin(2cx)\cos(2cx) + a = \frac{b}{4}\sin(4cx) + a$

$\frac{b}{4} = 2 \rightarrow b = 8 \quad a = 2$

$f(x) = 2\sin(4cx) + 2$

$\frac{\pi}{2} - \frac{\pi}{10} = \frac{2\pi}{5} = \frac{2\pi}{|4c|} \rightarrow c = \frac{4}{5} \rightarrow C = \frac{5}{4}$ → ۵

(۱٫۵)

$\frac{bc}{a} = \frac{8 \times \frac{5}{4}}{2} = \frac{10}{5}$

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$f(x) = a\cos bx + c$

$a = -3 \quad c = -1$

$f(x) = -3\cos bx - 1$

$T = \frac{2\pi}{|b|} = \pi \rightarrow |b| = 2$

$f(x) = -3\cos 2x - 1 = 0 \rightarrow \cos 2x = -\frac{1}{3}$

$\sin 2x = \sqrt{1 - \cos^2 2x} = \frac{2\sqrt{2}}{3}$

$|\tan 2x| = \left|\frac{\frac{2\sqrt{2}}{3}}{-\frac{1}{3}}\right| = 2\sqrt{2}$ ✓

(۲)

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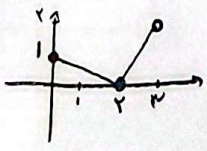

$0 \le x \le 2 \quad -\frac{1}{2}x + 2$

$2 \le x < 3 \quad 2x - 4$

$f(-\frac{3}{2}, 0) = f(-1, 5) = f(1, 5) = -\frac{1}{2} \times \frac{3}{2} + 2 = \frac{5}{4}$

$f(a) = \begin{cases} -\frac{1}{2}a + 1 & -1 \le a < 0 \\ 2a + 2 & 0 \le a < 1 \end{cases}$

$f(1.8) = \frac{1}{4}$

(۱٫۵)