

نام و نام خانوادگی لیلی قبادی پاسخنامه تشریحی تکلیف شماره ۴ کلاس دوازدهم دوره اول

$$m_{OA} = \frac{\sin \alpha}{\cos \alpha} = \tan \alpha \xrightarrow{\text{شیب خط مماس}} \frac{-1}{\tan \alpha} = -\cot \alpha = \frac{-\cos \alpha}{\sin \alpha}$$

$$y - \sin \alpha = \frac{-\cos \alpha}{\sin \alpha} (x - \cos \alpha)$$

$$\begin{aligned} A(\cos \alpha, \sin \alpha) \\ B(1, y) \end{aligned} \quad \left\{ \begin{aligned} AB &= \sqrt{(1 - \cos \alpha)^2 + (y - \sin \alpha)^2} = \sqrt{(1 - \cos \alpha)^2 + \left(-\frac{\cos \alpha}{\sin \alpha}(1 - \cos \alpha)\right)^2} = |1 - \cos \alpha| \sqrt{1 + \frac{\cos^2 \alpha}{\sin^2 \alpha}} \\ &= (1 - \cos \alpha) \sqrt{\frac{\sin^2 \alpha + \cos^2 \alpha}{\sin^2 \alpha}} = \frac{1 - \cos \alpha}{\sin \alpha} \Rightarrow AB = \frac{1 - \cos \alpha}{\sin \alpha} = \frac{1 - \sqrt{1 - \sin^2 \alpha}}{\sin \alpha} \end{aligned} \right.$$

$$\frac{AB}{\sin \angle ADB} = \frac{BD}{\sin \angle \theta} \quad , \quad \frac{AC}{\sin \angle ADC} = \frac{DC}{\sin \angle \theta} \Rightarrow AB = \frac{4 \sin \theta}{\sin \angle \theta} \quad , \quad AC = \frac{3 \sin \theta}{\sin \angle \theta}$$

$$\frac{AB}{AC} = \frac{\frac{4 \sin \theta}{\sin \angle \theta}}{\frac{3 \sin \theta}{\sin \angle \theta}} = \frac{4}{3} \times \frac{1}{\sqrt{2}} = \boxed{\sqrt{2}}$$

$$x^2 + y^2 = 1 \Rightarrow x_A = \frac{1}{\sqrt{2}} \quad , \quad y_A = \sqrt{1 - \left(\frac{1}{\sqrt{2}}\right)^2} = \frac{\sqrt{2}}{2} \quad , \quad C = (0, -1)$$

$$\begin{aligned} y_B = \frac{1}{\sqrt{2}} \Rightarrow x_B = \sqrt{1 - \left(\frac{1}{\sqrt{2}}\right)^2} = -\frac{\sqrt{2}}{2} \quad \text{مساحت مثلث} \\ = \frac{1}{2} \left| \frac{1}{\sqrt{2}} + \frac{1}{\sqrt{2}} + \frac{\sqrt{2}}{2} \right| = \frac{1}{2} \left| \frac{1}{\sqrt{2}} + \frac{\sqrt{2}}{2} \right| = \boxed{\frac{3 + \sqrt{3}}{4}} \end{aligned}$$

$$AB = \sqrt{\left(\frac{1}{\sqrt{2}} + \frac{\sqrt{2}}{2}\right)^2 + \left(\frac{\sqrt{2}}{2} - \frac{1}{\sqrt{2}}\right)^2} = \frac{1}{2} \sqrt{(1 + \sqrt{3})^2 + (\sqrt{3} - 1)^2} = \frac{1}{2} \sqrt{8} = \boxed{\sqrt{2}} \quad BC = \sqrt{\left(-\frac{\sqrt{2}}{2} - 0\right)^2 + \left(\frac{1}{\sqrt{2}} - (-1)\right)^2} = \boxed{\sqrt{3}}$$

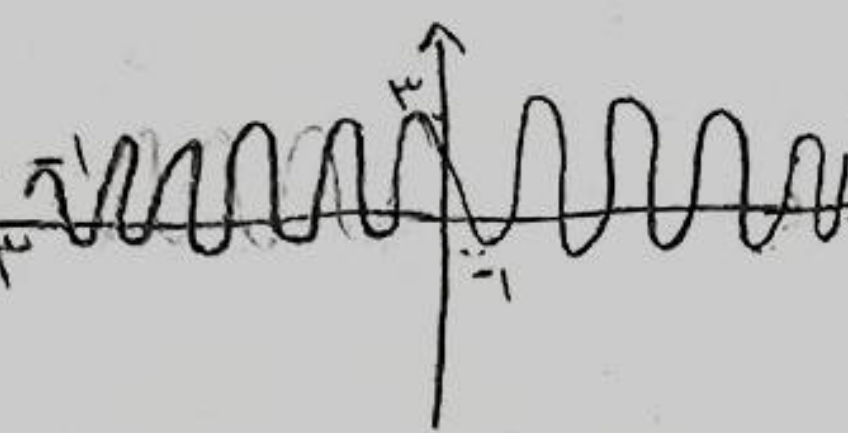
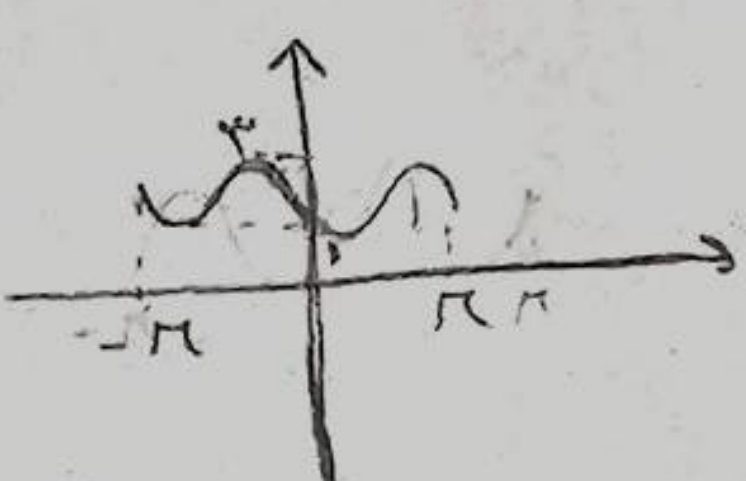
$$CA = \sqrt{\left(\frac{1}{\sqrt{2}} - 0\right)^2 + \left(\frac{\sqrt{2}}{2} + 1\right)^2} = \frac{1}{2} \sqrt{1 + 4 + 4\sqrt{2}} = \boxed{\sqrt{2 + \sqrt{2}}} \quad P = \sqrt{2} + \sqrt{3} + \sqrt{2 + \sqrt{2}}$$

$$AB = 10 \log_{10} \frac{10}{5} = \frac{10}{\log_{10} 2}$$

$$AC = 10 \log_{10} 2$$

$$S_{ABC} = \frac{1}{2} AB \cdot AC \sin A = \frac{1}{2} \times \frac{10}{\log_{10} 2} \times 10 \log_{10} 2 = \boxed{50}$$

$$\begin{aligned} 2 \cos^2 \alpha - \cos^2 \alpha - \sin^2(\alpha) (2 \sin^2 \alpha - 1) &= 1 \xrightarrow{\sin^2 \alpha = 1 - \cos^2 \alpha} 2 \cos^2 \alpha - \cos^2 \alpha - (1 - \cos^2 \alpha)(1 - 2 \cos^2 \alpha) = 1 \\ \Rightarrow 2 \cos^2 \alpha - \cos^2 \alpha - (1 - 2 \cos^2 \alpha - \cos^2 \alpha + 1) &= 1 \Rightarrow 2 \cos^2 \alpha - 1 = 1 \Rightarrow \cos^2 \alpha = 1 \Rightarrow \cos^2 \alpha + \sin^2 \alpha = 1 \\ \Rightarrow \sin^2 \alpha &= 0 \Rightarrow \sin \alpha = 0 \Rightarrow \sin^2 \alpha = 2 \sin \alpha \cos \alpha = 2 \times 0 \times 1 = \boxed{0} \end{aligned}$$

$y = 2 \cos(\pi x + \frac{\pi}{2}) + 1$ $y = -2 \sin \pi x + 1$ $\frac{2\pi}{\pi} = 2 = T$ $\min = - -2 + 1 = -1$ $\max = -2 + 1 = 1$ 	$y = -2 \sin \alpha \cos \alpha + 2 = -2 \sin 2\alpha + 2$ $\frac{2\pi}{2} = \pi = T$ $\min = - -2 + 2 = 0$ $\max = -2 + 2 = 2$ 
$\cot \alpha = +\infty$ $\cot \frac{\pi}{2} = 1$ $\sin \alpha \rightarrow \alpha \leq 0 \Rightarrow R_f = [-1, 0]$ $R = (1, +\infty)$ $U = [-1, 0] \cup (1, +\infty)$	
$f(x) = a + b \sin(cx) \cos(cx) \cos(\pi cx) = a + \frac{b}{\pi} \sin(\pi cx)$ $\frac{1}{\pi} \sin(\pi cx)$ $\frac{1}{\pi} \sin(\pi cx)$ $\frac{bc}{a} = \frac{\frac{a}{\pi} \times \pi}{\pi} = \boxed{\omega}$ $T = \frac{\pi}{\omega} - \frac{\pi}{10} = \frac{\pi}{\omega} \Rightarrow \frac{\pi}{\omega} = T \Rightarrow \omega = \frac{\pi}{T}$ $- \frac{b}{\pi} + a = 0$ $ \frac{b}{\pi} + a = \pi$ $\left. \begin{array}{l} - \frac{b}{\pi} + a = 0 \\ \frac{b}{\pi} + a = \pi \end{array} \right\} \begin{array}{l} a = \pi \\ b = \pi \end{array}$	نمودار با محور شروع می شود ا و b را با هم مساوی می کنیم
$a < 0 \rightarrow \text{با محور شروع می شود}$ $f(x) = a \cos bx + c$ $\frac{2\pi}{b} = \pi \Rightarrow b = 2$ $\begin{cases} a + c = 2 \\ - a + c = -1 \end{cases} \Rightarrow \begin{cases} c = -1 \\ a = 3 \Rightarrow a = -3 \end{cases}$ $f(x) = -3 \cos 2x - 1$	
$f(x) = y \quad T = \pi$ $f(x+T) = f(x)$ $-3 \times \frac{1}{\omega} + 3(12) = y = 1, \omega \Rightarrow f(1/\omega) = f(-3/\omega) = \boxed{1/\sqrt{\omega}}$ $f(x) = \frac{1}{\pi} x + 1 = \frac{1}{\pi} \times 1/\omega + 1$	