نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ۱۴ کلاس .....

۱

$\alpha + (1) = 90^\circ \longrightarrow \cos\alpha = \sin(1)$

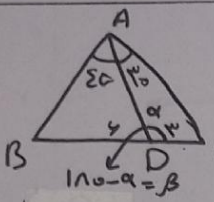
$\sin\alpha = \cos(1)$

$\cos(1) = \frac{1}{OB} = \sin\alpha \longrightarrow OB = \frac{1}{\sin\alpha}$

$(\hat{OBT})$

$AB = OB - \cancel{OA}^{1} = OB - 1 \longrightarrow \boxed{\frac{1}{\sin\alpha} - 1}$

۲



$\frac{AB}{AC}$

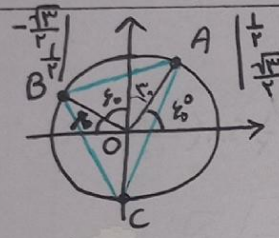
$\underbrace{(180-\alpha)}_{\beta} + (\alpha) = 180^\circ \longrightarrow \sin\beta = \sin\alpha$

$ABD \longrightarrow \frac{BD}{\sin 45} = \frac{AB}{\sin\beta}$

$ACD \longrightarrow \frac{CD}{\sin 30} = \frac{AC}{\sin\alpha}$

$\frac{AB}{AC} = \frac{BD \times \sin\beta}{CD \times \sin\alpha} \Big/ \frac{\sin 45}{\sin 30} = \frac{4\sqrt{2} \times \frac{1}{4}}{4 \times \frac{\sqrt{2}}{2}} = \frac{2}{\sqrt{2}} = \frac{4\sqrt{2}}{4} = \sqrt{2}$

۳



$S_1 = \frac{1}{2} \times 1 \times 1 \times 1 = \frac{1}{2}$

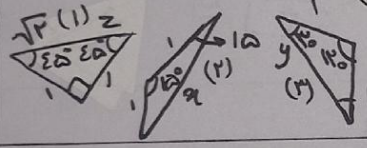
$S_2 = \left|\frac{1}{2} \times 1 \times 1 \times \frac{1}{2}\right| = \frac{1}{4}$

$S_3 = \left|\frac{1}{2} \times 1 \times 1 \times \frac{\sqrt{3}}{2}\right| = \frac{\sqrt{3}}{4}$

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

الف) S_{ABC} ؟ $\frac{4+\sqrt{3}}{4}$

ب) P_{ABC} ؟



(۲) $\longrightarrow \frac{x}{\sin 120} = \frac{1}{\sin 30} \rightarrow x = \frac{2}{\sqrt{6}-\sqrt{2}} = \frac{4(\sqrt{6}+\sqrt{2})}{4}$

(۳) $\longrightarrow \frac{y}{\sin 60} = \frac{1}{\sin 30} \rightarrow y = \sqrt{3}$

$P = \frac{\sqrt{6}+\sqrt{2}+2\sqrt{3}+2\sqrt{2}}{2} = \frac{\sqrt{6}+3\sqrt{2}+2\sqrt{3}}{2}$

۴

$S_{ABC} = \frac{1}{2} \times AC \times AB \times \sin 30^\circ$

$AB = \log_2^{27} = 3\log_2^3 \quad AC = \log_3^{16} = 4\log_3^2$

$\frac{1}{2} \times 4 \times \log_3^2 \times 3 \times \log_2^3 \times \frac{1}{4} = \boxed{3}$

$\log_3^2 \cdot \log_2^3 = 1$

۵

$2x^4 - x^2 - \sin^2(\alpha)(2\sin^2\alpha - 1) \Big| \cos\alpha - \cos\alpha$

$R = 1$

$x = \cos\alpha \longrightarrow 2\cos^4\alpha - \cos^2\alpha - \sin^2\alpha \underbrace{(2\sin^2\alpha - 1)}_{-\cos 2\alpha} = 4\cos^2\alpha \underbrace{(2\cos^2\alpha - 1)}_{\cos 2\alpha} + \sin^2\alpha \cos 2\alpha$

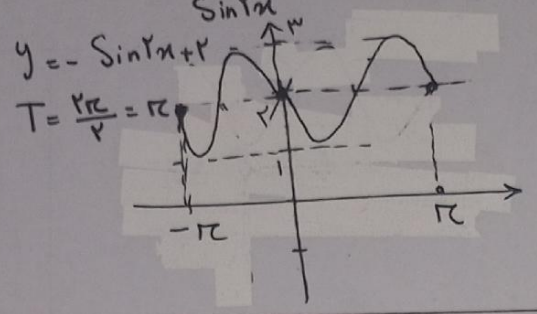
$\cos 2\alpha \underbrace{(\cos^2\alpha + \sin^2\alpha)}_{1} = \cos 2\alpha = 1 \longrightarrow \underbrace{\cos^2 2\alpha}_{1} + \underbrace{\sin^2 2\alpha}_{0} = 1 \quad \boxed{\sin 2\alpha = 0}$

۶

الف) $y = -\underbrace{2\sin x\cos x}_{\sin 2x} + 2$

$y = -\sin 2x + 2$

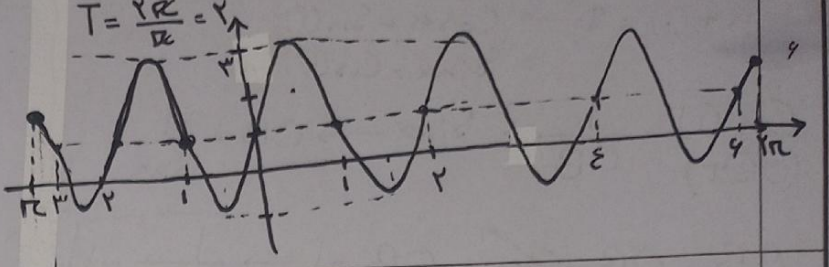
$T = \frac{2\pi}{2} = \pi$



ب) $y = 2\cos\left(\pi x + \frac{\pi}{2}\right) + 1$ $\quad [-\pi, \frac{2\pi}{3}]$

$y = -2\sin \pi x + 1$

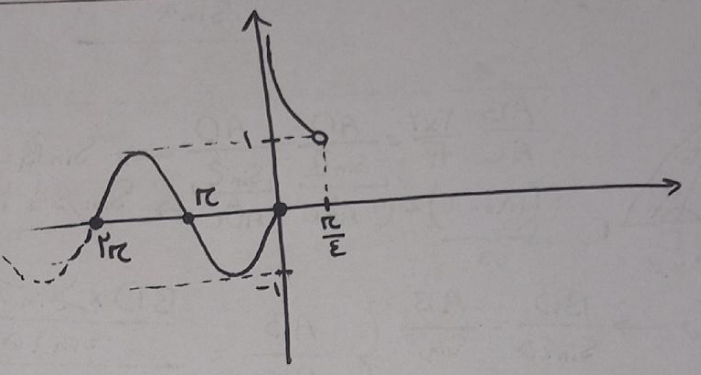
$T = \frac{2\pi}{\pi} = 2$



۷

$$F(x) = \begin{cases} \cot x & ; \ 0 < x < \frac{\pi}{4} \\ \sin x & ; \ x \le 0 \end{cases}$$

$R_{\text{تابع}} = [-1, +\infty)$



۸

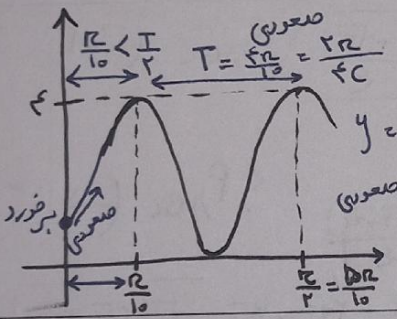
$F(x) = a + b\underbrace{\sin(cx)\cos(cx)}_{\frac{1}{2}\sin(2cx)}\cos(2cx)$ $\quad \frac{bc}{a}$? $\quad (c>0)$

$\frac{1}{2}\sin(2cx)\cos(2cx) = \frac{1}{4}\sin(4cx)$

$y = a + \frac{b}{4}\sin(4cx)$

$T = \frac{2\pi}{4c} = \frac{\pi}{2c}$ صعودی

$\frac{\pi}{10} < \frac{1}{2}$ $\quad T = \frac{4\pi}{10} = \frac{2\pi}{5c}$



صعودی $\rightarrow \frac{b}{4} \times \underbrace{4c}_{+} > 0 \rightarrow b > 0$

$y_{Max} = \frac{b}{4} + a = 4$

$y_{Min} = -\frac{b}{4} + a = 0$

$\left.\begin{matrix} y_{Max} = \frac{b}{4} + a = 4 \\ y_{Min} = -\frac{b}{4} + a = 0 \end{matrix}\right\} a = 2, \frac{b}{4} = 2 \rightarrow b = 8$

$\frac{8 \times \frac{4}{5}}{2} = \boxed{4}$

$T = \frac{2\pi}{\frac{4}{5}} = \frac{5\pi}{2} \rightarrow c = \frac{10}{8} = \frac{5}{4}$

۹

$F(x) = a\cos bx + c$ $\quad |\tan 2\alpha|$ $\quad 1 + \tan^2 2\alpha = \frac{1}{\cos^2 2\alpha} \rightarrow \frac{1}{9}$

$y_{max} = |a| + c = 2$

$y_{min} = -|a| + c = -4$ $\Big\} \rightarrow c = -1$ $\quad |a| = 3$

صعودی $\rightarrow a < 0 \rightarrow a = -3$

$y = -3\cos bx - 1$ $\quad T = \pi = \frac{2\pi}{|b|} \rightarrow |b| = 2$

$y = -3\cos 2x - 1$

$-3\cos 2x - 1 = 0$

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

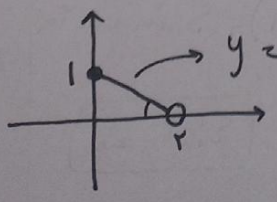
$\tan^2 2\alpha = 9 - 1 = 8$

$|\tan 2\alpha| = \boxed{2\sqrt{2}}$

۱۰

$F(x) = F(x \pm kT)$: k دایم در توابع متناوب

$F(-24/5) = F(-24/5 + 12(2)) = F(24 - 24/5) = F(11/5)$



$y = -\frac{1}{2}x + 1 \xrightarrow{x = \frac{11}{5}} -\frac{1}{2} \times \frac{11}{5} + \frac{5}{5} = \boxed{+\frac{1}{10}}$