نام و نام خانوادگی ...آرشید ابراهیمی... پاسخنامه تشریحی تکلیف شماره ...۲۰... کلاس ...دهم B...

۱

$(\sin 13\omega + \sin 47\omega)(\cos 47\omega - \cos 13\omega) = \frac{(\sqrt{2}-\sqrt{3})(\sqrt{2}+\sqrt{3})}{4} = \frac{2-3}{4} = -\frac{1}{4}$

ب) $\frac{1+3\tan^2 21^\circ}{4\cos^2 33^\circ + 2\cos^2 24^\circ} = \frac{1+3\times\frac{1}{3}}{3+1} = \frac{2}{4} = \frac{1}{2}$

۲

الف) $HC = ?$

$HC^2 = AC^2 - AH^2 \Rightarrow (2\sqrt{3})^2 - (\sqrt{3})^2 = 12-3 = 9 \rightarrow HC = 3$

ب) $\hat{B} = ?$

$AH = HC \times \tan 30^\circ \rightarrow AH = 9 \times \frac{1}{\sqrt{3}} = 3\sqrt{3}$

$\sin\hat{B} = \frac{AH}{AB} = \frac{3\sqrt{3}}{3\sqrt{4}} = \frac{1}{\sqrt{2}} \Rightarrow \hat{B} = 45^\circ$

۳

الف) $AD = \frac{\sqrt{3}}{2}a = 50\sqrt{3} \rightarrow a = 100 \rightarrow x = 100$

ب) $AB = AD + DB = 2$

$\hat{C} = 30^\circ \Rightarrow \tan 30^\circ = \frac{AB}{BC} = \frac{1}{\sqrt{3}} = \frac{2}{BC} \Rightarrow BC = 2\sqrt{3}$

$DC = \sqrt{DB^2 + BC^2} \rightarrow \sqrt{1+12} = \sqrt{13} \rightarrow \sin\alpha = \frac{1}{\sqrt{13}} \times \frac{\sqrt{13}}{\sqrt{13}} = \frac{\sqrt{13}}{13}$

۴

$\frac{AB}{AC} = \frac{\sin C}{\sin B} \Rightarrow \frac{\sin 105^\circ}{\sin 30^\circ}$

$\rightarrow \sin 105^\circ = \sin(60^\circ + 45^\circ) = \frac{\sqrt{6}+\sqrt{2}}{4}$

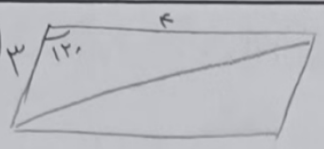
$\rightarrow \frac{AB}{AC} = \frac{\frac{\sqrt{6}+\sqrt{2}}{4}}{\frac{1}{2}} = \frac{\sqrt{6}+\sqrt{2}}{2}$

۵

$\hat{B}_1 = \hat{B}_2 \rightarrow$ متقابل به راس

$\frac{S_{ABE}}{S_{BCD}} = \frac{3\times 4\times \sin B_1}{4\times 6\times \sin B_2} = \frac{1}{4}$

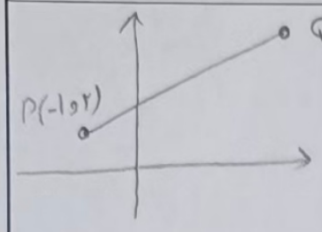
۶

الف) 

$S = ۴ \times ۳ \times \sin ۱۲۰ \rightarrow ۱۲ \times \frac{\sqrt{۳}}{۲} = ۶\sqrt{۳}$

ب) $\frac{۳ \times ۴ \times \sin ۱۲۰}{۲} = ۹ \times \frac{\sqrt{۳}}{۲} = ۴\sqrt{۳}$

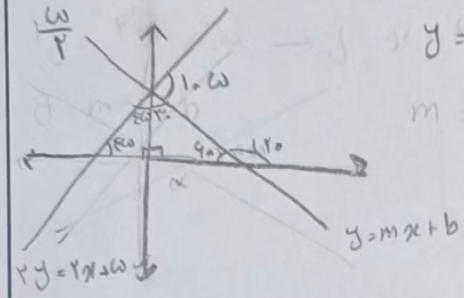
۷



$PQ = (۴,۲) \rightarrow (۳-(-۱), (۴-(۲))$

$\cos\theta = \frac{a}{\sqrt{a^۲+b^۲}} = \frac{۴}{\sqrt{۱۶+۴}} = \frac{۴}{\sqrt{۲۰}} = \frac{۲}{\sqrt{۵}}$

۸



$y = x + \frac{ω}{۲} \rightarrow \tan\alpha = ۱ \rightarrow \alpha = ۴ω$

$\tan ۱۲۰ = -\sqrt{۳} \rightarrow y = \underbrace{-\sqrt{۳}}_{m} x + \underbrace{\frac{ω}{۲}}_{b}$

$\rightarrow mb = -\frac{ω\sqrt{۳}}{۲}$

۹

$f(x) = \cos(\pi + x) + \sin(\frac{\pi}{۲} + x) - \tan(\frac{۳\pi}{۲} + x)$, $f(\frac{ω\pi}{۹})$

$\rightarrow -\cos x + \cos x + \cot x \xrightarrow{ω\pi} f(\frac{ω\pi}{۹}) = \cot(\frac{ω\pi}{۹})$

$\rightarrow \cot ۱۰۰^\circ = -\sqrt{۳}$

۱۰

$$\frac{\sin(\frac{۱۷\pi}{۲} + x) + \cos(\frac{۱۰\pi}{۲} - x)}{\cos(۳\pi + x) - \sin(۷\pi - x)} = \frac{\cos x + \sin x}{-\cos x + \sin x}$$

$$\frac{\cos x - \sin x}{-(\cos x - \sin x)} = -۱$$