نام و نام خانوادگی ......کیان پیرحسینی......... پاسخنامه تشریحی تکلیف شماره ...۲۰... کلاس ......دهم ریاضی A......

۱

$\cos(۳۶۰+۱۳۵) =$ [scribbled out] $\cos ۱۳۵ = -\frac{\sqrt{۲}}{۲}$

$\cos(\frac{۳\pi}{۲}+۴۵) = \sin(۴۵) = \frac{\sqrt{۲}}{۲}$

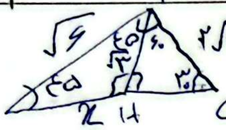
$\cos ۱۵۰ = -\frac{\sqrt{۳}}{۲}$

الف) $\left(\frac{\sqrt{۲}}{۲}+\left(-\frac{\sqrt{۳}}{۲}\right)\right)\left(\frac{\sqrt{۲}}{۲}+\frac{\sqrt{۳}}{۲}\right)$

$\frac{\sqrt{۲}-\sqrt{۳}}{۲} \times \frac{\sqrt{۲}+\sqrt{۳}}{۲} = \frac{۲-۳}{۴} = -\frac{۱}{۴}$

$\frac{۱+۳(\frac{۱}{۳})}{۴(\frac{۳}{۴})+۲(\frac{۲}{۴})} = \frac{۱+۱}{۳+۱} = \frac{۲}{۴} = \frac{۱}{۲}$

۲



$۲x^۲ = ۶$

$x^۲ = ۳$

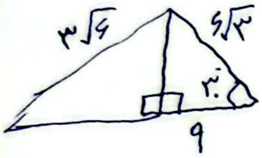
$x = \sqrt{۳}$

$HC = \sqrt{۳+۱۲-۲(۳)} = \sqrt{۹} = ۳$

$\frac{\sqrt{۱۲}}{\frac{\sqrt{۲}}{۲}} = \frac{\sqrt{۶}}{\sin C} \Rightarrow \frac{۲\sqrt{۱۲}}{\sqrt{۲}} = \frac{\sqrt{۶}}{\sin C}$

$\sin C = \frac{\sqrt{۶}\times\sqrt{۲}}{۲\sqrt{۱۲}}$, $\frac{\sqrt{۱۲}}{۲\sqrt{۱۲}} = \frac{۱}{۲}$

$\hat{C} = ۳۰^\circ$



$\cos = \frac{\text{مجاور}}{\text{وتر}}$

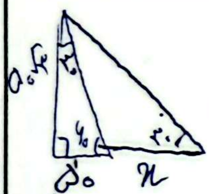
$\cos ۳۰^\circ = \frac{۹}{AC} = \frac{\sqrt{۳}}{۲}$

$AC = \frac{۱۸}{\sqrt{۳}} = ۶\sqrt{۳}$

$\frac{۳\sqrt{۶}}{\frac{۱}{۲}} = \frac{۶\sqrt{۳}}{\sin B} \Rightarrow \sin B = \frac{۳\sqrt{۳}}{۳\sqrt{۶}} = \frac{\sqrt{۳}}{\sqrt{۶}} = \frac{\sqrt{۱۸}}{۶} = \frac{۳\sqrt{۲}}{۶} = \frac{\sqrt{۲}}{۲}$

$B = ۴۵^\circ$

۳

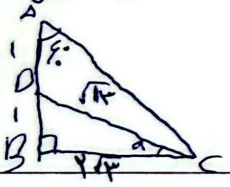


$\tan ۶۰ = \sqrt{۳} = \frac{۵۰\sqrt{۳}}{BD} \Rightarrow BD = ۵۰$

$\tan ۳۰ = \frac{۱}{\sqrt{۳}} = \frac{۵۰\sqrt{۳}}{۵۰+x}$ [scribbled out]

$۵۰ + x = ۱۵۰$

$x = ۱۰۰$

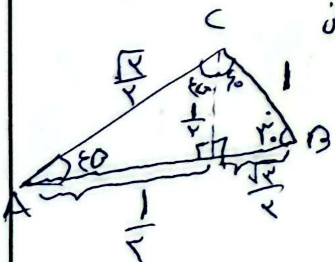


$\cot ۶۰ = \frac{۱}{\sqrt{۳}} = \frac{۲}{BC} \Rightarrow BC = ۲\sqrt{۳}$

$۱+۱۲ = ۱۳ \Rightarrow DC = \sqrt{۱۳}$

$\sin a = \frac{۱}{\sqrt{۱۳}} = \frac{\sqrt{۱۳}}{۱۳}$

۴

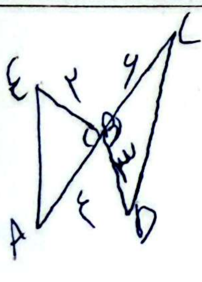


فرض $BC = ۱$

$\cos ۳۰ = \frac{\sqrt{۳}}{۲} = \frac{x}{۱} \Rightarrow x = \frac{\sqrt{۳}}{۲}$

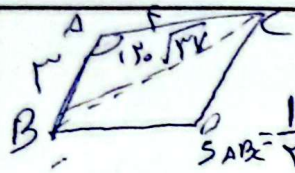
$\frac{AB}{AC} = \frac{\frac{\sqrt{۳}+۱}{۲}}{\frac{\sqrt{۲}}{۲}} = \frac{\sqrt{۳}+۱}{\sqrt{۲}} = \frac{\sqrt{۶}+\sqrt{۲}}{۲}$

۵



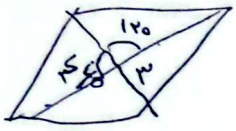
$\frac{S_{ABE} = \frac{۱}{۲}\times ۲\times ۴\times \sin B}{S_{BCD} = \frac{۱}{۲}\times ۳\times ۶\times \sin B} = \frac{۸}{۱۸} = \frac{۴}{۹}$

۶



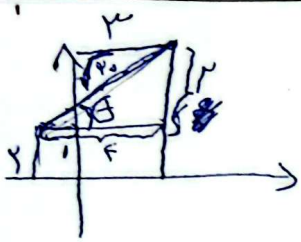
$S_{ABC} = \frac{1}{2} \times 3 \times 4 \times \sin 120 = \frac{1}{2} \times 12 \times \frac{\sqrt{3}}{2} = 6 \times \frac{\sqrt{3}}{2} = 3\sqrt{3}$

$S_{ABC} = S_{CBD} \Rightarrow S_{ABCD} = 2 \times 3\sqrt{3} = 6\sqrt{3}$



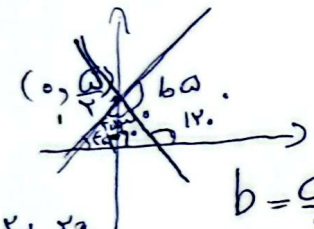
$\frac{1}{2} \times 3 \times 4 \times \sin 60 = \frac{1}{2} \times 12 \times \frac{\sqrt{3}}{2} = 3\sqrt{3}$

۷



$\cos\theta = \frac{F}{\sqrt{20}} = \frac{4\sqrt{5}}{2\sqrt{5}} = \frac{\sqrt{20}}{5} = \frac{2\sqrt{5}}{5}$

۸



$b = \frac{5}{2}$

$m = \tan 120 = -\sqrt{3}$

$mb = -\frac{5\sqrt{3}}{2}$

$2y = 2x + 5$

$y = x + \frac{5}{2}$

$1 = \tan$

۹

$$f\left(\frac{5\pi}{6}\right) = \cos\left(\pi + \frac{5\pi}{6}\right) + \sin\left(\frac{\pi}{2} - \frac{5\pi}{6}\right) - \tan\left(\frac{3\pi}{2} + \frac{5\pi}{6}\right)$$

$$= \cos\left(\frac{3\pi}{2} + \frac{\pi}{3}\right) + \sin\left(-\frac{2\pi}{6} = -\frac{\pi}{3}\right) - \tan\left(\frac{14\pi}{6} = 2\pi + \frac{\pi}{3} = \frac{7\pi}{3}\right)$$

$$\sin\left(\frac{\pi}{3}\right) + \sin\left(-\frac{\pi}{3}\right) - \tan\left(\frac{\pi}{3}\right) = -\sqrt{3}$$

$$-\sin\left(\frac{\pi}{3}\right)$$

۱۰

$$\frac{\sin\left(4\pi + \frac{\pi}{2} + x\right) + \cos\left(4\pi + \frac{3\pi}{2} - x\right)}{\cos(\pi + x) - \sin(-x)} = \frac{\sin\left(\frac{\pi}{2} + x\right) + \cos\left(\frac{3\pi}{2} - x\right)}{\cos(\pi + x) + \sin(x)}$$

$$\frac{\cos(x) - \sin(x)}{-\cos(x) + \sin(x)} = \frac{\cos(x) - \sin(x)}{-(\cos(x) - \sin(x))} = -1$$