۱۸٫۵

نام و نام خانوادگی ...سهیل بهرامی... پاسخنامه تشریحی تکلیف شماره ..۱۰۷.. کلاس یازدهم ریاضی B......

۱	(۲)	$m = \frac{\Delta y}{\Delta x} = \frac{m-k}{4-(-2)} = \frac{m-k}{6} = -\frac{1}{2} \Rightarrow m-k = -3 \Rightarrow \lvert m-k \rvert = 3 = \Delta y$ $AB = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{6^2+3^2} = \sqrt{36+9} = \sqrt{45} = 3\sqrt{5}$ $S = 45$ ✓
۲	(۲)	$AB = \sqrt{(\Delta x)^2+(\Delta y)^2} = \sqrt{4^2+3^2} = 5$ ✓ $m_{AB} = m_{CD} = -\frac{3}{4} = \frac{3}{-1-2x} \Rightarrow -1-2x = -4 \Rightarrow x = \frac{3}{2} \Rightarrow C(\frac{3}{2}, y)\ D(-\frac{5}{2}, y+3)$ $m_{BC} \times m_{CD} = -1 \Rightarrow m_{BC} = \frac{4}{3} = \frac{y-1}{-\frac{3}{2}} \Rightarrow \frac{-2}{\frac{4}{3}} = \frac{-2(y-1)}{3} \Rightarrow y-1 = -2 \Rightarrow y = -1$ $\Rightarrow C(\frac{3}{2}, -1),\ D(-\frac{5}{2}, 2)$ $BC = \sqrt{(\Delta x)^2+(\Delta y)^2} = \sqrt{(\frac{3}{2})^2 + 2^2} = \frac{5}{2}$ ✓ $\Rightarrow$ محیط مستطیل $= 2 \times (\frac{5}{2} + 5) = 15$ ✓
۳	(۲)	$y = (\frac{-2m}{m^2-1})x + \frac{3}{m^2-1}$, $a = \tan_\alpha = \sqrt{3}$ $\Rightarrow \frac{-2m}{m^2-1} = \sqrt{3} \Rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$ $\lvert m_2 - m_1 \rvert = \frac{\sqrt{\Delta}}{\lvert a \rvert} = \frac{\sqrt{4+12}}{\sqrt{3}} = \frac{4}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$ ✓
۴	(۲)	$BC: y = 2x - 3 = y - 2x + 3 = 0$ $m = \frac{\Delta y}{\Delta x} = \frac{11-3}{7-3} = \frac{8}{4} = 2 \Rightarrow y = 2x + b \xrightarrow{(3,3)} 3 = 6 + b \Rightarrow b = -3$ $AH = \frac{\lvert 9-2+3 \rvert}{\sqrt{1^2+(-2)^2}} = \frac{10}{\sqrt{5}} = 2\sqrt{5}$ ✓
۵	(۲)	معادله AB = معادله BC $y = -2x + 7$, $y = \frac{7}{2}x - \frac{19}{2}$ $-2x + 7 = \frac{7}{2}x - \frac{19}{2} \Rightarrow \frac{11}{2}x = \frac{33}{2} \Rightarrow x_B = 3 \Rightarrow y_B = 1$ $BH = \frac{\lvert 4-9-8 \rvert}{\sqrt{(4)^2+(-3)^2}} = \frac{13}{5} = 2.6$ ✓

۶ — نمره: ۲

$$\frac{x}{-\frac{3}{4}}+\frac{y}{-6}=1 \Rightarrow -6x-\frac{3}{4}y=\frac{9}{2} \xrightarrow{x=y} -\frac{27}{4}x=\frac{9}{2} \Rightarrow x=-\frac{2}{3},\quad y=-\frac{2}{3}$$

$\rightarrow \frac{2}{3}\sqrt{2}$ ✓

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۷ — نمره: ۲

$d_1: y=ax+1$

$d_2: y=\frac{1}{a}x+\frac{a-1}{a}$

موازی اند $\Rightarrow a=\frac{1}{a} \Rightarrow a^2=1 \Rightarrow a=\pm 1$

$\rightarrow a=1$: $\begin{cases} d_1: y=x+1 \rightarrow (1,2) \\ d_2: y=x \end{cases}$

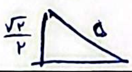
$\rightarrow a=-1$: $\begin{cases} d_1: y=-x+1 & (1,2) \\ d_2: y=-x+2 \end{cases}$ غ ق ق

$a=1$

$d_1: y=x+1,\ y-x=1$

$d_2: y-x=0$

$\Rightarrow$ فاصله‌ی دو خط موازی d_1 و d_2 $=\frac{|1-0|}{\sqrt{1+1}}=\frac{1}{\sqrt{2}}=\frac{\sqrt{2}}{2}$



$\sqrt{25-\frac{1}{2}}=\sqrt{\frac{49}{2}}=\frac{7}{\sqrt{2}}=\frac{7\sqrt{2}}{2} \Rightarrow \frac{\sqrt{2}}{2}\times\frac{7\sqrt{2}}{2}=\frac{7}{2}$ ✓

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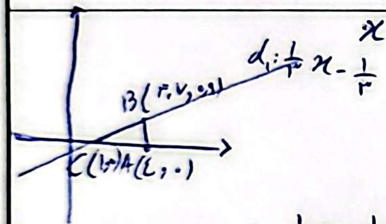
۸ — نمره: ۲



$x-3y=1 \Rightarrow y=\frac{1}{3}x-\frac{1}{3}: d_1$

$d_2: y=-3x+b \xrightarrow{(4,0)} 0=-12+b \Rightarrow b=12 \Rightarrow d_2: y=-3x+12$

معادله d_1 = معادله d_2 $\Rightarrow \frac{1}{3}x-\frac{1}{3}=-3x+12 \Rightarrow \frac{10}{3}x=\frac{37}{3} \Rightarrow x=3.7 \Rightarrow y=0.9$ $B(3.7, 0.9)$

بیشترین مساحت زمانی است که نقطه C در محل تقاطع باشد $\Leftarrow y=0 \Leftarrow d_1$

$0=\frac{1}{3}x-\frac{1}{3} \Rightarrow x=1$

$C(1,0)$, $A(4,0)$ $\Rightarrow AC=\sqrt{(\Delta x)^2+(\Delta y)^2}=\sqrt{3^2+0^2}=3$

$BH=\frac{0.9}{1}=0.9$ $S_{ABC}=\frac{3\times 0.9}{2}=\frac{27}{20}=1.35$ ✓

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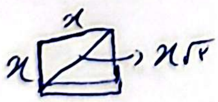
۹ — نمره: ۲

$m=\frac{\Delta y}{\Delta x}=\sqrt{3}=\frac{b-a}{-\frac{1}{3}-(-\frac{1}{2})}=\frac{b-a}{\frac{1}{6}} \Rightarrow b-a=\frac{\sqrt{3}}{6}$

$A(-\frac{1}{2}, a)$

$B(-\frac{1}{3}, b)$ $\Rightarrow \overline{AB}=\sqrt{(\Delta x)^2+(\Delta y)^2}=\sqrt{(\frac{1}{6})^2+(\frac{\sqrt{3}}{6})^2}=\frac{2}{6}=\frac{1}{3}$



$\rightarrow x\sqrt{2}$ اندازه قطر = $\sqrt{2}$ اندازه ضلع اندازه قطر = $\sqrt{2}\times\frac{1}{3}=\frac{\sqrt{2}}{3}$ ✓

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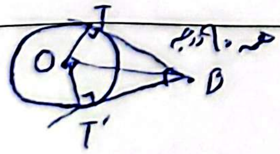
۱۰ — نمره: ۱/۵



$M_{OT}=\frac{0-(-4)}{0-(-3)}=\frac{4}{3}$ ✓ $\Rightarrow m_O=-\frac{3}{4}$ ✓

$m_{OT}\times m_{OT'}=-1$

$T(-3,-4)$ است و T' نقطه برخورد مماس رسم شده با دایره است

$r=\overline{OT}=\overline{OT'}=\sqrt{(4)^2+(3)^2}=5$ ✓

$\Rightarrow m_{OT'}=-\frac{3}{4} \Rightarrow OA': y=-\frac{3}{4}x+b \xrightarrow{(0,0)} b=0 \Rightarrow y=-\frac{3}{4}x \Rightarrow T'(x, -\frac{3}{4}x)$

$\Rightarrow \overline{OT'}=\sqrt{x^2+\frac{9}{16}x^2}=\sqrt{\frac{25}{16}x^2}=|\frac{5}{4}x|=5 \Rightarrow -\frac{5}{4}x=5 \Rightarrow x=-4$ $T'(-4, 3)$

$x<0$ در ناحیه دوم است

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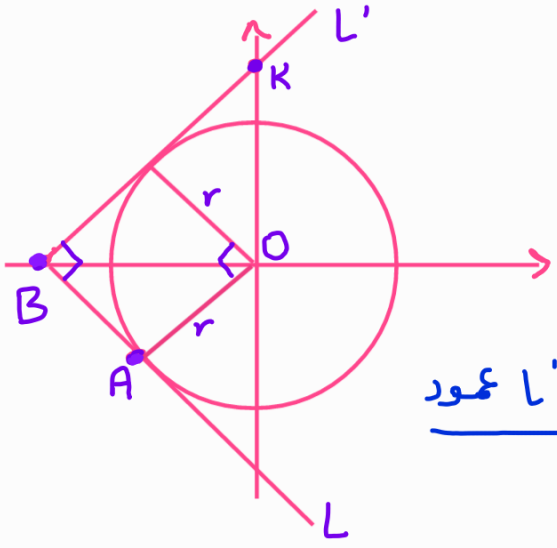

$$m_{OA} = \frac{۴}{۳} \xrightarrow{\text{عمود بر } L} m_l = -\frac{۳}{۴}$$

$$L: y+۴ = -\frac{۳}{۴}(x+۳) \to y = -\frac{۳}{۴}x - \frac{۲۵}{۴}$$

$$\xrightarrow{l \text{ و } l' \text{ عمود}} m_{L'} = \frac{۴}{۳} \to L': y - \frac{۴}{۳}x - K = ۰$$

$$ol' = OA = \sqrt{۹+۱۶} = ۵ \quad \text{شعاع}$$

$$ol' = \frac{|۱-K|}{\sqrt{۱+\frac{۱۶}{۹}}} = ۵ \to K = \frac{۲۵}{۳} \to L': y = \frac{۴}{۳}x + \frac{۲۵}{۳}$$

مختصات B محل تقاطع l و l' $\Rightarrow (-۷, -۱) \xrightarrow{\text{حاصل ضرب}} \boxed{۷}$