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

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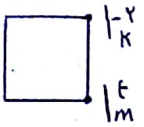

$m_{AB} = -\frac{1}{2} = \frac{m-k}{4+2} = \frac{m-k}{6} \rightarrow 2(m-k) = -6 \rightarrow k-m = 3$

$\overline{AB} = \sqrt{\underbrace{(k-m)^2}_{9} + \underbrace{(-2-2)^2}_{4^2}} = \sqrt{80}$

محیط $= \sqrt{80} \times \sqrt{80} = \boxed{40}$

(۲)

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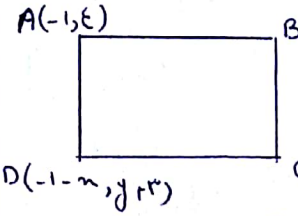

$x_A + x_C = x_B + x_D \rightarrow -1+m = 3+(-1-m) \rightarrow -1+m = 2-m \Rightarrow m = \frac{3}{2}$

$m_{AB} \times m_{BC} = -1 \rightarrow -\frac{2}{4} \times \frac{1-y}{\underbrace{3-m}_{3-\frac{3}{2}=\frac{3}{2}}} = -1 \Leftarrow AB \perp BC$ در مستطیل اضلاع مجاور عمودند

$m_{AB} = \frac{1-4}{3-(-1)} = -\frac{3}{4}$ (۳)

$\rightarrow -\frac{3}{4} \times \frac{1-y}{\frac{3}{2}} = -1 \Rightarrow y = -1 \rightarrow C(\frac{3}{2}, -1)$

$D(-\frac{5}{2}, 2)$

$AB = \sqrt{(4-1)^2 + (-1-3)^2} = \sqrt{9+16} = 5$

$AD = \sqrt{(4-2)^2 + (-1-(-\frac{5}{2}))^2} = \sqrt{4+\frac{9}{4}} = \frac{5}{2}$

محیط مستطیل $= 5 + 5 + \frac{5}{2} + \frac{5}{2} = \boxed{15}$

۳

$\tan 60^\circ = \sqrt{3}$

$2mx + (m^2-1)y = 3 \rightarrow (m^2-1)y = 3 - 2mx \Rightarrow y = \frac{-2m}{m^2-1}x + \frac{3}{m^2-1}$

$\frac{-2m}{m^2-1} = \sqrt{3} \rightarrow -\sqrt{3}m^2 - \sqrt{3} = -2m \rightarrow \sqrt{3}m^2 + 2m - \sqrt{3} = 0$ (۲)

$|\alpha - \beta| = \frac{\sqrt{\Delta}}{|a|} = \frac{\sqrt{4 + 4(\sqrt{3})(\sqrt{3})}}{\sqrt{3}} = \frac{\sqrt{16}}{\sqrt{3}} = \frac{4}{\sqrt{3}} = \boxed{\frac{4\sqrt{3}}{3}}$

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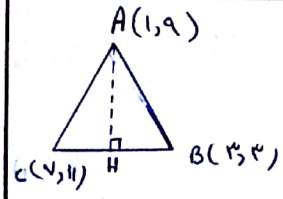


$m_{BC} = \frac{11-3}{7-3} = \frac{8}{4} = 2$

$y_{BC} \Rightarrow y - 3 = 2(x-3) \rightarrow y - 3 = 2x - 6 \rightarrow$

$y = 2x - 3$

$d_{AH} = \frac{|9 - 2 + 3|}{\sqrt{1+4}} = \frac{10}{\sqrt{5}} = \boxed{2\sqrt{5}}$ (۲)

۵

$BC: 2y - 7x = -19$

$AB: y + 2x = 7 \xrightarrow{\times -2} -2y + 4x = -14$

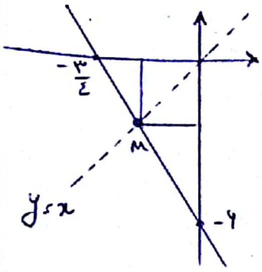
$\Rightarrow -11x = -33 \Rightarrow x = 3, y = 1 \quad B(3,1)$

$AC: 4y - 3x = 17$

فاصله نقطه B از خط AC = طول ارتفاع BH

$\rightarrow d = \frac{|-9 + 4 - 17|}{\sqrt{25}} = \frac{22}{5} = \boxed{4,4}$ (۲)

۶ (۲)



$m_{خط} = \frac{-6-0}{0-(-\frac{3}{4})} = \frac{-6}{\frac{3}{4}} = -8$ $y-0 = -8(x-(-\frac{3}{4})) \to$ $y_{خط} = -8x-6$

نقطه M محل تلاقی قطر مربع و خط → $-8x-6 = x \Rightarrow -9x = 6 \Rightarrow x = -\frac{2}{3} \Rightarrow M(-\frac{2}{3}, -\frac{2}{3})$

اندازه قطر مربع = فاصله مبدأ تا M = $\sqrt{(0-(-\frac{2}{3}))^2+(0-(-\frac{2}{3}))^2} = \sqrt{\frac{4}{9}+\frac{4}{9}} = \sqrt{\frac{8}{9}} = \boxed{\frac{2\sqrt{2}}{3}}$

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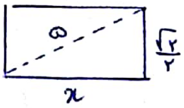
۷ (۲)

دو خط موازی → $y-ax=1 \to y=ax+1$ ، $ay-x=a-1 \to y=\frac{1}{a}x+\frac{a-1}{a}$ } $a=\frac{1}{a} \Rightarrow a=\pm 1$

→ $a=-1 \to y=-x+1$, $y=-x+2$ → غ ق ق نقطه (۱،۲) صدق نمی‌کند

→ $a=1 \to y=x+1$, $y=x$ $d = \frac{|1|}{\sqrt{2}} = \frac{\sqrt{2}}{2}$



→ $5^2 = x^2+\frac{1}{2} \to x=\sqrt{24.5}$ مساحت مستطیل = $(\sqrt{24.5})(\frac{\sqrt{2}}{2}) = \sqrt{12.25} = \boxed{3.5}$

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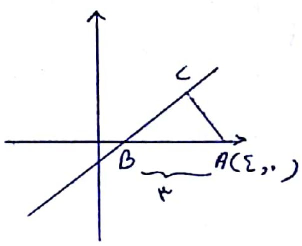
۸ (۲)



$B \to y=0$ $x-3(0)=1 \Rightarrow x=1$ $B(1,0)$

اندازه ارتفاع = $\frac{|4-0-1|}{\sqrt{1+9}} = \frac{3}{\sqrt{10}}$ $x-3y=1 \to y=\frac{1}{3}x-\frac{1}{3}$

$mm'=-1 \to m_{AC}=-3$ $y-0=-3(x-4) \to y_{AC}=-3x+12$

C ← تلاقی دو خط $\Rightarrow -3x+12 = \frac{1}{3}x-\frac{1}{3} \to -3x-\frac{1}{3}x = -12-\frac{1}{3} \to 37 = 10x \Rightarrow x=3.7$, $y=0.9$ $C(3.7, 0.9)$

$BC = \sqrt{(0.9-0)^2+(3.7-1)^2} = \frac{9\sqrt{10}}{10}$ مساحت = $\frac{3}{\sqrt{10}} \times \frac{9\sqrt{10}}{10} \times \frac{1}{2} = \frac{27}{20} = \boxed{1.35}$

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۹ (۲)

$m = \frac{b-a}{-\frac{1}{3}-(-\frac{1}{2})} = \frac{b-a}{\frac{1}{6}} = \sqrt{3} \to b-a = \frac{\sqrt{3}}{6}$

ضلع مربع = $\sqrt{(b-a)^2+(-\frac{1}{3}+\frac{1}{2})^2} = \sqrt{\frac{3}{36}+\frac{1}{36}} = \sqrt{\frac{4}{36}} = \frac{2}{6} = \frac{1}{3}$

قطر مربع = $a\sqrt{2} = \frac{1}{3}\times\sqrt{2} = \boxed{\frac{\sqrt{2}}{3}}$

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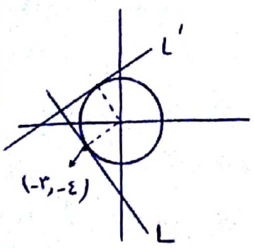
۱۰ (۲)



شعاع دایره = فاصله مرکز تا (-۳،-۴) → $\sqrt{(0-(-4))^2+(0-(-3))^2} = \sqrt{25} = 5$ $mm'=-1$

$m_{L'} = \frac{0+4}{0+3} = \frac{4}{3}$ $y_L \Rightarrow y+4 = -\frac{3}{4}(x+3) \to y+4 = -\frac{3}{4}x-\frac{9}{4} \Rightarrow y = -\frac{3}{4}x-\frac{25}{4}$

$y_{L'} = \frac{4}{3}x+\frac{25}{3}$ محل برخورد دو خط $\Rightarrow \frac{4}{3}x+\frac{25}{3} = -\frac{3}{4}x-\frac{25}{4}$

$16x+100 = -9x-75 \to 25x = -175 \Rightarrow x=-7$ $y = \frac{4}{3}(-7)+\frac{25}{3} = -1$ ($-\frac{28}{3}$) $xy = (-7)(-1) = \boxed{7}$