تکلیف ۱۷ — به نام خدا — امیرسعید سلمان

۱-

$\frac{m-k}{6} = -\frac{1}{2} \Rightarrow m-k = -3$ $\quad \overline{AB} = \sqrt{(4+2)^2 + (m-k)^2} = \sqrt{6^2+(-3)^2} = \sqrt{45} \quad (\sqrt{45})^2 = 45$

۲-

$AB \perp BC \quad AB = (3-(-1), 1-4) = (4,-3)$

$AD \parallel CD \quad BC = (x-3, y-1) \quad CD = (-1-x)-(x), (4)-(y) = (-1-2x, 4-y)$

$4(x-3) + (-3)(y-1) = 0$

$\frac{4}{-1-2x} = \frac{-3}{4-y}$

$x = \frac{3}{2}, \ y = -1$

$\Leftarrow \begin{cases} AB = 5 \\ BC = \frac{5}{2} \end{cases}$ محیط ۱۵

۳-

$(m^2-1)y + 2mx = 3 \quad y = \frac{-2m}{m^2-1}x + \frac{3}{m^2-1} \quad k = -\frac{2m}{m^2-1} = \sqrt{3} \quad \Delta x = \frac{\sqrt{\Delta}}{|a|} \quad \frac{4}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

۴-

$m = \frac{11-3}{7-3} = 2 \quad BC = y-3 = 2(x-3) \Rightarrow y = 2x-3 \quad \frac{|2(1)-9-3|}{\sqrt{2^2+(-1)^2}} = \frac{|2-12|}{\sqrt{5}} = \frac{10}{\sqrt{5}} = 2\sqrt{5}$

۵-

$AB = y+2x = 7$

$AC = 4y-3x = 17$

$BC = 3y-7x = -19$

$y = 7-2x$

تقاطع AC و AB $\Rightarrow 4(7-2x)-3x = 17 \Rightarrow x=1, \ y=5$ } A

$3(7-2x)-7x = -19 \Rightarrow x=3, \ y=1$ } B

$\Rightarrow C \,|^{5}_{A}$

AC تا B فاصله

$\frac{|4(1)-3(3)-17|}{\sqrt{4^2+(-3)^2}} = \frac{22}{5}$

۶-

$m = \frac{-6-0}{0-\frac{3}{4}} = -8 \quad \begin{cases} y = -8x-6 \\ y = x \end{cases} \quad x = -8x-6 \Rightarrow 9x = -6 \Rightarrow x = -\frac{2}{3}$

$\frac{2}{3} = $ ضلع

$\Leftarrow (0,-6)$ و $(-$[redacted]$\frac{3}{4}, 0)$

$d = \frac{2\sqrt{2}}{3}$

۷-

$y-x=1, \ y-ax = 1-a \Rightarrow 2-1=1$

$1-a = 1-a \Rightarrow a=1$

$\frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|1-(0)|}{\sqrt{(1)^2+(-1)^2}} = \frac{1}{\sqrt{2}}$

$s^2 + (\frac{1}{\sqrt{2}})^2 = 25 \Rightarrow s = \frac{7}{\sqrt{2}} \quad A = s.h = \frac{7}{\sqrt{2}} \times \frac{1}{\sqrt{2}} = \frac{7}{2}$

۸-

فاصله A از خط

$x-3y=1$

$\Rightarrow \frac{|4-1|}{\sqrt{1^2+(-3)^2}} = \frac{3}{\sqrt{10}}$

s max وقتی رأس سوم روی عمود مربوط باشد

$S_{max} = \frac{27}{20}$

۹-

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

$O(-\frac{1}{3}, b)$

$\frac{b-a}{-\frac{1}{3}+\frac{1}{2}} = \frac{b-a}{\frac{1}{6}} = \sqrt{3} \Rightarrow b-a = \frac{\sqrt{3}}{6}$

$\overline{PO} = \sqrt{(\frac{1}{6})^2 + (\frac{\sqrt{3}}{6})^2} = \frac{1}{3}$

$d = \frac{1}{2}\sqrt{2} = \frac{\sqrt{2}}{2}$

۱۰-

$r = \sqrt{9+16} = 5 \Rightarrow x^2+y^2 = 25$

معادله مماس $= y+4 = -\frac{3}{4}(x+3)$

شیب شعاع $= \frac{-4}{-3} = \frac{4}{3}$

$\parallel$ مماس $= -\frac{3}{4}$

$\frac{4}{3} = $ شیب خط عمود $\Rightarrow y = \frac{4}{3}x + \frac{25}{3}$

$-7x-1 = 7$

$(-7,-1) = $ ۷ - تقاطع