۱)

$\frac{\Delta y}{\Delta x} = -\frac{1}{2} \Rightarrow \Delta x = 6 \Rightarrow \Delta y = -3$

$m - k = -3$

$\sqrt{(m-k)^2 + 6^2} = d$

$\sqrt{9 + 36} = d$

$d = \sqrt{45}$

$S = d^2 = (\sqrt{45})^2 = 45$

---

۲)

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

$9 + 16$

$m = m'$

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

$-1 - 2x = -4$

$-2x = -3$

$x = \frac{3}{2}$

$\sqrt{(-\frac{5}{2} - \frac{3}{2})^2 + (y+3-y)^2} = 5$ ✓

$16 \quad 9$

$|AB| = \sqrt{9+16} = 5$

$|BC| = \sqrt{\frac{9}{4} + 4} = \frac{5}{2}$

$2(|AB| + |BC|) = 15$

$\frac{15}{2}$

$AB \perp BC$

$m_{AB} \cdot m_{BC} = -1$

$\frac{3}{-4} \times m_{BC} = -1$

$m_{BC} = \frac{4}{3}$

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

$y - 1 = -2$

$y = -1$

۳ـ

$2mx + (m^2 - 1)y = 3$

$m = \frac{-2m}{m^2 - 1}$

$\sqrt{3} = \frac{-2m}{m^2 - 1}$

$\sqrt{3}m^2 - \sqrt{3} = -2m$

$\sqrt{3}m^2 + 2m - \sqrt{3} = 0$

$\frac{-2 \pm \sqrt{4 + 12}}{2\sqrt{3}} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

$-\frac{3}{\sqrt{3}}$

$\frac{1}{\sqrt{3}} + \frac{3}{\sqrt{3}} = \frac{4}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{4\sqrt{3}}{3}$

۴ـ

$\frac{\Delta y}{\Delta x} = \frac{8}{4} = 2$

$y = 2x - 3 \Rightarrow y - 2x + 3 = 0$

$\frac{|9 - 2 + 3|}{\sqrt{1+4}} = \frac{10}{\sqrt{5}}$

$= \frac{10\sqrt{5}}{5} = 2\sqrt{5}$

۵ـ

$\begin{cases} y + 2x = 7 \\ 2y - 7x = -19 \end{cases}$

$2y + 4x = 14$

$11x = 33$

$x = 3$

$y = 1$

$B = (3, 1)$

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

۶ـ

$(0, -6)$

$(-\frac{3}{4}, 0)$

$\frac{x}{-\frac{3}{4}} + \frac{y}{-6} = 1$

$-6x - \frac{3}{4}y = \frac{9}{2}$

$-24x - 3y = 18$

$-8x - y = 6$

$\begin{cases} -8x - y = 6 \\ y - x = 0 \end{cases}$

$-9x = 6$

$x = -\frac{2}{3}$

$y = -\frac{2}{3}$

$\sqrt{(0 + \frac{2}{3})^2 + (0 + \frac{2}{3})^2} = \frac{\sqrt{8}}{3}$

$\frac{4}{9} + \frac{4}{9}$

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

۷-

$m = m'$ $\qquad y = ax + 1$ $\quad \begin{cases} y = x+1 \\ y = -x+1 \end{cases}$ غ ق ق

$m = a$

$a = \frac{1}{a}$ $\qquad y = \frac{1}{a}x + a - 1$ $\quad \begin{cases} y = x \\ y = -x-2 \end{cases}$ غ ق ق $\qquad \frac{1}{\sqrt{1+1}} = \frac{\sqrt{2}}{2}$

$a = \pm 1$ $\qquad m' = \frac{1}{a}$

$\sqrt{(\frac{\sqrt{2}}{2})^2 + x^2} = 5$

$\frac{1}{2}$

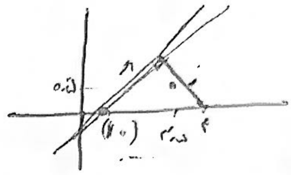
$3.5 = \frac{7}{2} = \frac{7\sqrt{2}}{2} \times \frac{\sqrt{2}}{2}$ $\qquad x^2 + 24.5 = x^2 = \frac{49}{2}$

$x = \frac{7}{\sqrt{2}} = \frac{7\sqrt{2}}{2}$

۸-

$x - 3y - 1 = 0$ $\qquad \frac{|(4) - 3(0) - 1|}{\sqrt{1+9}} = \frac{3}{\sqrt{10}}$

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



$x = \frac{9}{\sqrt{10}}$ $\qquad (\frac{3}{\sqrt{10}})^2 + x^2 = 9$ $\qquad (1, 0) =$ نقطه سوم

$x^2 = 8.1 = \frac{81}{10}$ $\qquad \frac{9}{10} + x^2 = 9$ $\qquad \frac{1}{2} \times \frac{9}{\sqrt{10}} \times \frac{3}{\sqrt{10}} = \frac{27}{20}$

۹-

$\frac{\Delta y}{\Delta x} = \sqrt{3}$ $\qquad \sqrt{(\frac{1}{6})^2 + (\frac{\sqrt{3}}{6})^2} = \frac{1}{3}$

$\frac{1}{36} + \frac{3}{36} = \frac{4}{36} = \frac{1}{9}$

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

$\sqrt{(\frac{1}{3})^2 + (\frac{1}{3})^2} = \sqrt{\frac{2}{9}} = \frac{\sqrt{2}}{3}$

۱۰-

$r = \sqrt{(-3-0)^2 + (4-0)^2} = 5$ $\qquad y = \frac{4}{3}x + \frac{25}{3}$ $\qquad d \parallel d'$

$m_d = \frac{0-(4)}{0-(-3)} = \frac{4}{3}$

$\frac{|b|}{\frac{5}{3}} = 5 =$ فاصله d از d' $\qquad d' \Rightarrow y = \frac{4}{3}x + b$

$m_{d'} = \frac{4}{3}$

$|b| = \frac{25}{3} \Rightarrow \begin{cases} b = \frac{25}{3} \\ b = -\frac{25}{3} \end{cases}$ غ ق ق $\qquad d'$ ناحیه ۲ $\Rightarrow b = \frac{25}{3}$

$\frac{25}{3} + \frac{4}{3}x = -\frac{3}{4}x - \frac{25}{4}$

$\frac{25}{12}x = \frac{-100-75}{12} \Rightarrow x = -7, \; y = -1$ $\qquad xy = (-1) \times (-7) = 7$