

الف ①

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$$m = \frac{5}{-1} = -5$$

$$(y - y_1) = m(x - x_1) \rightarrow y - 2 = -5(x - 4) \rightarrow y = -5x + 20 + 2$$

$$\Rightarrow y = -5x + 22$$

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$$2y + 4x = -1$$

↓

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

↓

$$y - 2 = -2(x - 4) \rightarrow y = -2x + 8 + 2 \leftarrow m = -2$$

$$y = -2x + 10$$

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$$x + 2y = 1$$

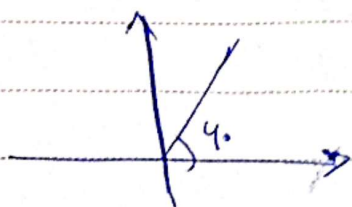
$$\rightarrow 2y = -x + 1 \rightarrow y = -\frac{x}{2} + \frac{1}{2} \rightarrow m = -\frac{1}{2}$$

↓

$$y - 2 = \frac{1}{2}(x - 4) \rightarrow y = \frac{1}{2}x - 2 + 2$$

$$y = \frac{1}{2}x$$

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$$m = \tan 40^\circ = \sqrt{3}$$

$$y - 2 = \sqrt{3}(x - 4) \rightarrow y = \sqrt{3}x - 4\sqrt{3} + 2$$



$$d_{\text{line}} = \sqrt{x^2 + (y-1)^2} = \sqrt{14+9} = 5 \quad \text{الف} \quad \text{ب} \quad \text{ج}$$

$$d_{\text{line}} = \frac{|9+12-3|}{\sqrt{9+14}} = \frac{18}{5} = 3.6 \quad \text{ب} \quad \text{ج}$$

$$x+4y=1, \quad x+4y=12$$

$$x+4y=9$$

الف) معادله خط، ب) این خط، ج) میانی این خط

$$\begin{cases} x+4y=1 \\ x+4y=9 \end{cases} \rightarrow x+4y=5$$

$$x+4y = \frac{c+c'}{2} = \frac{12+1}{2}$$

$$x+4y=10$$

$$4y = -(x+1) \rightarrow y = -\frac{1}{4}x - \frac{1}{4}$$

$$\frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|1-12|}{\sqrt{14+16}} = \frac{11}{5} = \frac{11}{5} = \frac{11}{5} = \frac{11}{5}$$

$$x-y=1, \quad x+y=3$$

الف) خط میانی، ب) خط، ج) خط

$$\frac{|ax+by-c|}{\sqrt{a^2+b^2}} = \frac{|a'x+b'y-c'|}{\sqrt{(a')^2+(b')^2}}$$

$$\frac{|x-y-1|}{\sqrt{1^2+1^2}} = \frac{|x+y-3|}{\sqrt{1^2+1^2}}$$

$$x-y-1 = x+y-3 \rightarrow x-y = -2$$

$$x-y-1 = -x-y+3 \rightarrow 2x = 4 \rightarrow x=2$$

$$\rightarrow x+y=3$$

$$y = -x + 2 \rightarrow m = -1$$

$$y = x + 2 \rightarrow m = 1$$

$$y + x = 2, \quad y - x = 2 \quad \text{نقطه } (1, 1) \quad \textcircled{a}$$

$$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| = \left| \frac{-1 - 1}{1 - 1} \right| = \left| \frac{-2}{0} \right| = 1$$

$$\tan \alpha = 1 \rightarrow \alpha = \frac{\pi}{4}$$

$$\beta = \frac{x}{r}$$

$$B \begin{vmatrix} -1 \\ 1 \end{vmatrix}, \quad A \begin{vmatrix} 1 \\ -1 \end{vmatrix} \quad \textcircled{b}$$

$$\text{مسافت} = \sqrt{(-1-1)^2 + (1+1)^2} = \sqrt{1^2 + 1^2} \quad \text{الف}$$

$$= \sqrt{1+1} = \sqrt{2}$$

$$B \begin{vmatrix} -1 \\ 1 \end{vmatrix} \quad | \quad y \quad A \begin{vmatrix} 1 \\ -1 \end{vmatrix}$$

$$\frac{-1+1}{1} = 0 \rightarrow -1+1 = 0 \rightarrow 0 = 0 \quad \boxed{n=0}$$

$$\frac{x-1}{1} = y \rightarrow x-1 = y \rightarrow y = x-1 \rightarrow \boxed{y=x-1}$$

$$\text{نقطه } \begin{vmatrix} -1 \\ 1 \end{vmatrix}$$

$$\text{الف) } \begin{vmatrix} 1 \\ -1 \end{vmatrix}, \begin{vmatrix} -1 \\ 1 \end{vmatrix}, \begin{vmatrix} 1 \\ 1 \end{vmatrix} \quad \text{ب) این سه نقطه به رأس یک مثلث با هم می‌زنند:} \quad \textcircled{c}$$

$$\frac{1-1-1}{1} = \frac{-1}{1} = -1$$

$$\begin{vmatrix} 1 \\ -1 \end{vmatrix} \quad \text{الف) مرکز ثقل}$$

$$\frac{1+1-1}{1} = \frac{1}{1} = 1$$



$$S = \frac{1}{r} \begin{vmatrix} r & -r & -1 \\ 1 & r & -1r \\ 1 & 1 & 1 \end{vmatrix} = \frac{1}{r} (9 + r^4 - 10 + r^0 + r + r^3) =$$

$$\frac{1}{r} \times 9r = \boxed{r^8}$$

$$\therefore y = \frac{r_{n+1}}{r_n - r} \quad (1)$$

$$-y = \frac{r_{n+1}}{r_n - r} \quad (\text{الف})$$

$$y = \frac{-r_{n+1}}{-r_n - r} \quad (2)$$

$$n = \frac{ry+1}{ry-r} \rightarrow y = -\frac{r_{n+1}}{r_n - r} = \frac{r_{n+1}}{r_n - r} \quad (3)$$

$$-n = \frac{-ry+1}{-ry-r} \rightarrow y = -\frac{r_{n+1}}{r_n + r} \rightarrow y = \frac{-r_{n+1}}{r_n + r} \quad (4)$$

$$\therefore y = \frac{r_{n+1}}{n-r} \quad (5)$$

الف) $y = \frac{r_{n+1}}{n-r}$ $\rightarrow$ $n = \frac{ry+1}{ry-r}$ $\rightarrow$ $y = \frac{-r_{n+1}}{r_n - r}$

$$n' = n - \alpha \rightarrow n = n' + \alpha$$

$$y' = y - \beta \rightarrow y = y' + \beta$$

$$y' - r = \frac{r(n' + r) + 1}{n' + r - r} = \frac{r_{n'} + r + 1}{n' - 1} \rightarrow y' - r = \frac{r_{n'} + \alpha}{n' - 1}$$

$$y' = \frac{r_{n'} + \alpha}{n' - 1} + r \rightarrow y' = \frac{r_{n'} + \alpha + r_{n'} - r}{n' - 1} \rightarrow y' = \frac{\alpha n' + r}{n' - 1}$$



$$y = \frac{m+1}{n-2}$$

ب) إذا كان $\frac{m}{n} \sim 1$ فإن $\frac{m}{n} = 1$

$$n' = n - 2 \rightarrow n = n' + 2$$

$$y' = y - 1 \rightarrow y = y' + 1$$

$$y' + 1 = \frac{1(n' + 2) + 1}{n' + 2 - 2} = \frac{n' + 3 + 1}{n'} \rightarrow y' = \frac{n' + 4}{n'} - 1$$

$$y' = \frac{n' + 4 - n'}{n'} \Rightarrow \boxed{y' = \frac{4}{n'}}$$

$$\begin{cases} 12x + 19y = 2 \\ 17x - 19y = 1 \end{cases}$$

$$\begin{aligned} y &= \frac{-1}{19} \quad (10) \\ x &= \frac{12}{19} \end{aligned}$$

$$12x + 19y = 2$$

$$-17x + 19y = -1$$

$$19y = -1 \rightarrow y = \frac{-1}{19}$$

$$12x - \frac{1}{19} = 2 \rightarrow 12x = \frac{39}{19} \rightarrow x = \frac{39}{19 \times 12} = \frac{13}{19}$$

$$x = -\frac{12 + 10}{-10 - 12}$$

$$y = \frac{12 - 10}{-10 - 12}$$

$$x = -\frac{12}{-19} = \frac{12}{19}$$

$$y = \frac{-1}{19}$$

