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الف ①

$$m = \frac{4}{-1} = -4$$

$$(y - y_1) = m(x - x_1) \rightarrow y - 2 = -4(x - 4) \rightarrow y = -4x + 16 + 2$$

$$\Rightarrow y = -4x + 18$$

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$$2y + 4x = -1 \text{ دیکھو}$$

↓

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

↓ دیکھو

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

$$y = -2x + 10$$

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$$x + 2y = 1 \text{ دیکھو}$$

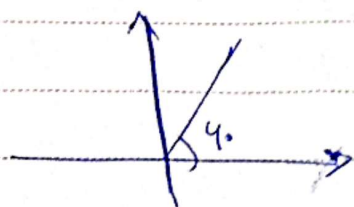
$$\rightarrow 2y = -x + 1 \rightarrow y = -\frac{x}{2} + \frac{1}{2} \rightarrow m = -\frac{1}{2}$$

دیکھو

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

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

ب



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

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



$$d_{AB} = \sqrt{r^2 + (-1-r)^2} = \sqrt{14+9} = 5 \quad \text{الف} \quad \text{ب} \quad \text{ج} \quad \text{د}$$

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

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

$$x+4y=9$$

الف) معادله خط، ب) این خط، ج) دایره، د) خط

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

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

$$x+4y=10$$

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

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

$$x-y=1, \quad x+y=3 \quad \text{الف) خط، ب) دایره، ج) خط، د) خط}$$

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

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

$$\begin{aligned} x-y-1 &= x+y-3 \rightarrow x-y-1 = -x-y+3 \rightarrow 2x-2y=4 \rightarrow x-y=2 \end{aligned}$$

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

$$y = x + 8 \rightarrow m = 1$$

$$y + 2x = 2, \quad y - x = 8 \quad \text{نقطه } (2, -2) \quad (2)$$

$$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| = \left| \frac{-2 - 1}{1 - 2} \right| = \left| \frac{-3}{-1} \right| = 3$$

$$\tan \alpha = 3 \rightarrow \alpha = \frac{\pi}{3}$$

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

$$B \begin{vmatrix} -2 \\ 1 \end{vmatrix}, \quad A \begin{vmatrix} 1 \\ -1 \end{vmatrix} \quad (3)$$

$$\text{فاصله} = \sqrt{(-2-1)^2 + (1+1)^2} = \sqrt{1^2 + 4^2} \quad (\text{الف})$$

$$= \sqrt{4 + 16} = \sqrt{20} = 2\sqrt{5}$$

$$B \begin{vmatrix} -2 \\ 1 \end{vmatrix} \quad | \quad y \quad A \begin{vmatrix} 1 \\ -1 \end{vmatrix} \quad (4)$$

$$\frac{-2+1}{1} = n \rightarrow -2+1 = 2n \rightarrow 2n = -1 \rightarrow \boxed{n = -\frac{1}{2}}$$

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

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

$$\text{این سه نقطه به رأس یک مثلث با هم: } \begin{vmatrix} -1 \\ 1 \end{vmatrix}, \begin{vmatrix} -2 \\ 1 \end{vmatrix}, \begin{vmatrix} 1 \\ -1 \end{vmatrix} \quad (5)$$

$$\left| \frac{1-2-1}{1} \right| = \frac{-2}{1} = -2$$

$$\left| \frac{-2-1-1}{-1} \right| = \frac{-4}{-1} = 4$$

$$\left| \frac{1+2-1}{1} \right| = \frac{2}{1} = 2$$



$$S = \frac{1}{r} \begin{vmatrix} r & -r & -1 \\ 1 & r & -1r \\ 1 & 1 & 1 \end{vmatrix} = \frac{1}{r} (9 + r^2 - 10 + r^2 + r + r^2) =$$

$$\frac{1}{r} \times 9r = \boxed{r^2}$$

$$\therefore y = \frac{r^2 + 1}{r^2 - r} \quad (1)$$

$$-y = \frac{r^2 + 1}{r^2 - r} \quad (\text{الف})$$

$$y = \frac{-r^2 + 1}{-r^2 - r} \quad (2)$$

$$x = \frac{ry + 1}{ry - r} \rightarrow y = -\frac{r^2 - 1}{r^2 - r} = \frac{r^2 + 1}{r^2 - r} \quad (3)$$

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

$$\therefore y = \frac{r^2 + 1}{r^2 - r} \quad (5)$$

الف) $y = \frac{r^2 + 1}{r^2 - r}$ $\rightarrow$ $y = \frac{r^2 + 1}{r(r - 1)}$

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

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

$$y' - r = \frac{r(x' + r) + 1}{x' + r - r} = \frac{r^2 + r + 1}{x' - 1} \rightarrow y' - r = \frac{r^2 + r + 1}{x' - 1}$$

$$y' = \frac{r^2 + r + 1}{x' - 1} + r \rightarrow y' = \frac{r^2 + r + 1 + r^2 + r}{x' - 1} \rightarrow y' = \frac{2r^2 + 2r + 1}{x' - 1}$$



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

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

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

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

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

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

$$\begin{cases} 12x + 8y = 2 \\ 12x - 19y = 1 \end{cases}$$

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

$$12x + 8y = 2$$

$$-12x + 19y = -1$$

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

$$12x - \frac{8}{19} = 2 \rightarrow 12x = \frac{38}{19} \rightarrow x = \frac{38}{19 \times 12} = \frac{19}{19}$$

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

$$y = \frac{12 - 2}{-10 - 12}$$

ب)

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

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

