

$$m = \frac{\Delta y}{\Delta x} = \frac{2 - (-2)}{2 - 5} = \frac{4}{-3} = -\frac{4}{3}$$

(الف)

$$\text{جایگزینی} \rightarrow x = 2 \Rightarrow -\frac{4}{3}x + b = y \Rightarrow -\frac{4}{3}(2) + b = 2 \Rightarrow b = \frac{14}{3}$$

$$\Rightarrow y = -\frac{4}{3}x + \frac{14}{3}$$

$$\text{۲ ضلعی} \rightarrow \frac{a}{a'} = \frac{b}{b'} \neq \frac{c}{c'} \Rightarrow m = m'$$

(ب)

$$\Rightarrow m' = \frac{-\text{ضلع } x}{\text{ضلع } y} = \frac{-4}{2} = -2 \Rightarrow y = -2x + b$$

$$\text{جایگزینی} \rightarrow x = 2 \Rightarrow -2(2) + b = 2 \Rightarrow b = 6$$

$$\Rightarrow y = -2x + 6$$

$$\text{۳ ضلعی} \rightarrow mm' = -1 \rightarrow m = \frac{-\text{ضلع } x}{\text{ضلع } y} = \frac{-1}{3}$$

(ج)

$$\rightarrow -\frac{1}{3} \times m' = -1 \Rightarrow m' = 3 \xrightarrow{\text{جایگزینی}} x = 2$$

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

$$y - 2 = 3(x - 2) \Rightarrow y = 3x - 4$$

$$\frac{x}{y} = 4.0 \rightarrow \tan 4.0 = \sqrt{3} = \text{نسبة جيب}$$

$$\text{حل المسألة} \rightarrow x = \varepsilon \Rightarrow \varepsilon \sqrt{3} + b = 2 \Rightarrow b = 2 - \varepsilon \sqrt{3}$$

$$\Rightarrow y = \sqrt{3}x + 2 - \varepsilon \sqrt{3}$$

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \Rightarrow d = \sqrt{(-1 - 2)^2 + (2 - 3)^2}$$

(2) (3)

(الف)

$$\begin{bmatrix} 2 \\ 3 \end{bmatrix}, \begin{bmatrix} -1 \\ 2 \end{bmatrix} \Rightarrow d = \sqrt{9 + 14} = \sqrt{23} = \underline{\underline{4.8}}$$

$$3x + 4y = 3 \xrightarrow{\text{مرتب لي}} \frac{3x}{a} + \frac{4y}{b} = \frac{3}{c}$$

(ب)

$$d = \frac{|ax + by + c|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|4 + 12 - 3|}{\sqrt{23}} = \frac{13}{\sqrt{23}} = \frac{13}{4.8} = \underline{\underline{2.7}}$$

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$$2x + 3y = 4 \quad 4x + 4y = 1$$

(3)

معادله خط  
و معادله خط  
موازی  $\rightarrow ax + by + \frac{c+c'}{2} = 0$

(الف)

مستقیم موازی  $\rightarrow 2x + 3y - 4 = 0, 2x + 3y - 8 = 0$

$\Rightarrow$  خط وسط:  $2x + 3y + \left(\frac{-4-8}{2}\right) = \underline{2x + 3y - 6 = 0}$

فاصله خط موازی  $\rightarrow \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|-4 - (-8)|}{\sqrt{4 + 9}}$

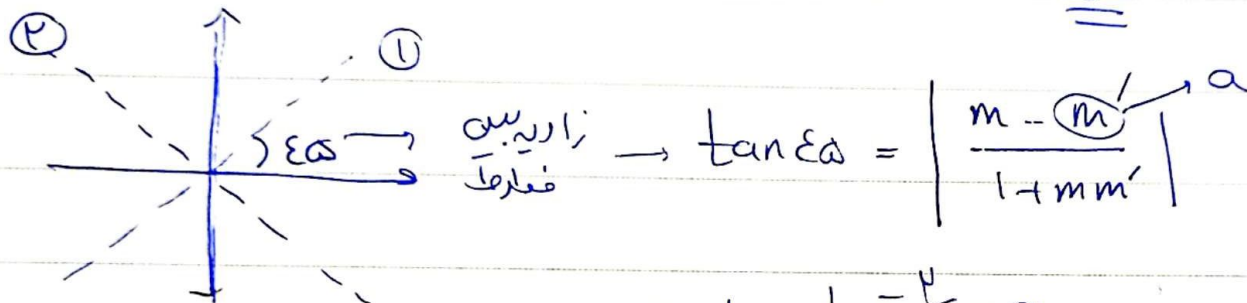
(ب)

$$= \frac{4}{\sqrt{13}} \times \frac{\sqrt{13}}{\sqrt{13}} = \frac{4\sqrt{13}}{13}$$

$$d_1 = r_m + r_y - r \Rightarrow d r_s \quad r_m - r_y - 1 s$$

$$m = -\frac{r}{r} \quad m' = \frac{r}{r} \Rightarrow \text{bit}$$

9



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

$$\Rightarrow 1 = \left| \frac{-\frac{r}{r} - a}{1 - \frac{r}{r}a} \right|$$

$$\Rightarrow 1 = \frac{-\frac{r}{r} - a}{1 - \frac{r}{r}a} \Rightarrow 1 = \frac{-r - r_a}{\frac{r - r_a}{r}} \Rightarrow r - r_a = -r - r_a$$

$$a = -a \Rightarrow -a x + b = y$$

$$\Rightarrow -1 = \frac{-r - r_a}{r - r_a} \Rightarrow r_a - r = -r - r_a$$

$$2a = 1$$

$$\Rightarrow a = \frac{1}{2} \Rightarrow \frac{1}{2}x + b = y$$

نقطه برخورد خط با دایره، مرکز دایره

$$\frac{\mu x - 1}{r} = \frac{\mu - \mu x}{r} \Rightarrow 9x - \mu = 4 - 8x$$

$$17x = 4 \Rightarrow x = \frac{4}{17}$$

$$x = \frac{4}{17}$$

$$\mu x - 1 = \mu y \Rightarrow \frac{4\mu}{17} - 1 = \mu y$$

$$\Rightarrow \frac{4\mu - 17}{17} = \mu y \Rightarrow y = \frac{4 - 17\mu}{17\mu}$$

$$\Rightarrow \textcircled{1} - 8 \times \frac{4}{17} + b = \frac{4}{17} \Rightarrow b = \frac{84}{17}$$

$$\Rightarrow b = \frac{84}{17} = 8 \Rightarrow \textcircled{1} - 8x + 8 = b$$

$$\Rightarrow \textcircled{2} \frac{1}{0} \times \frac{4}{17} + b = \frac{4}{17} \Rightarrow b = \frac{4}{17} - \frac{4}{17}$$

$$\Rightarrow b = \frac{4}{17} = \frac{4}{17} \Rightarrow \frac{1}{0}x + \frac{4}{17} = y$$

$$y - \mu x = 0, \quad y + \mu x = \mu \rightarrow \alpha ??$$

$$m = +\mu$$

$$m' = -\mu$$

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

$$\Rightarrow \tan \alpha = \left| \frac{\mu - (-\mu)}{1 - \mu^2} \right| = \left| \frac{2\mu}{1 - \mu^2} \right| = 1 \Rightarrow \alpha = 45^\circ \textcircled{1}$$

زاویه کوچک

$\beta < 135^\circ$

$$\textcircled{2} \left| \frac{-\mu - (-\mu)}{1 - \mu^2} \right| = 1$$

زاویه بزرگتر

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$$A \begin{vmatrix} w \\ -r \end{vmatrix} \quad B \begin{vmatrix} -a \\ r \end{vmatrix}$$

(5) (4)

$$d = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2}$$

(الف)

$$\Rightarrow d = \sqrt{1^2 + 4^2} = \underline{\underline{10}}$$

$$\text{مركز} \Rightarrow \frac{x_A + x_B}{2} = x_M, \quad \frac{y_A + y_B}{2} = y_M$$

$$\Rightarrow \frac{w-a}{r} = -1, \quad \frac{r-r}{r} = 1 \Rightarrow M = (-1, 1)$$

$$x_M = \frac{x_A + x_B + x_C}{3} = \frac{-1 - r + w}{3} = \underline{\underline{w}}$$

(6) (v)

$$y_M = \frac{y_A + y_B + y_C}{3} = \frac{-1 + w + 1}{3} = \underline{\underline{w}} \Rightarrow M = (-w, -w)$$

$$S = \frac{1}{r} \begin{bmatrix} w & +1 & 1 \\ -r & w & 1 \\ -1 & -w & 1 \end{bmatrix} = \frac{1}{r} (1 + (-1) + 1 - (-w) - (-w) - (-w^2))$$

$$= \frac{1}{r} (1 - 1 + 1 + w + w + w^2) = \underline{\underline{1}}$$

$$y = \frac{2x+1}{5x-3}$$

(الف)

الف) نسبت به محور ها  $\leftarrow$  معادله

$$\Rightarrow -y = \frac{2x+1}{5x-3} \Rightarrow y = \frac{-2x-1}{5x-3}$$

$$y = \frac{1-2x}{-5x-3}$$

ب) معادله  $\leftarrow$  معادله

$$x = \frac{2y+1}{5y-3}$$

ج) نقطه اول و دوم  $\leftarrow$  معادله

$$\rightarrow 5xy - 3x = 2y + 1 \Rightarrow 5xy - 2y = 3x + 1$$

$$y(5x-2) = 3x+1 \Rightarrow y = \frac{3x+1}{5x-2}$$

د) ناصیه دوم و  $\leftarrow$  معادله و جوابی

$$y = \frac{3x+1}{5x-2} \xrightarrow{\text{جوابی}} \frac{3x+1}{5x-2} = y \xrightarrow{\text{معادله}}$$

$$\frac{-3x-1}{-5x-2} = -y \Rightarrow y = \frac{1-3x}{5x+2}$$

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

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$$n' = n - r \Rightarrow n' + r = n$$

$$y' = y + r \Rightarrow y' - r = y$$

الف) مركز  $\frac{r}{-r}$

$$(y' - r) = \frac{r(n' + r) + 1}{n' + r - r} \Rightarrow y' - r = \frac{rn' + a}{n' - 1}$$

$$y' = \frac{rn' + a}{n' - 1} + r \Rightarrow y' = \frac{rn' + a + rn' - r}{n' - 1}$$

$$\Rightarrow y' = \frac{rn' + r}{n' - 1}$$

$$n' = n - r \quad y' = y - r$$

$$n' + r = n \quad y' + r = y$$

ج.

$$y' + r = \frac{r(n' + r) + 1}{n' + r - r} \Rightarrow y' + r = \frac{rn' + v}{n'}$$

$$y' = \frac{rn' + v - rn'}{n'} \Rightarrow y' = \frac{v}{n'}$$

$$\begin{cases} 12x + 14y = 1 \\ x - 8y = 1 \end{cases}$$

(2)

(10)

$$\begin{aligned} & \times \begin{cases} 12x + 14y = 1 \\ 14x - 112y = 14 \end{cases} \\ & \div \begin{cases} 12x + 14y = 1 \\ 14x - 112y = 14 \end{cases} \end{aligned}$$

(الف)

$$\Rightarrow \begin{cases} 12x + 14y = 1 \\ 14x - 112y = 14 \end{cases}$$

$$14x = 14 \Rightarrow x = \frac{14}{14}$$

$$\frac{14}{14} - 8y = 1$$

$$-8y = 1 - \frac{14}{14}$$

$$-8y = \frac{-1}{14} \Rightarrow y = \frac{-1}{14}$$

$$x = \frac{14 - (-14)}{(-14) - 8} \quad y = \frac{1 - 14}{(-14) - 8}$$

$$\Rightarrow x = -\frac{14}{-14} \quad y = \frac{1}{-14}$$

$$\underline{x = \frac{14}{14}, y = \frac{-1}{14}}$$