

مسئله: از معادله خطی عبور می کند

بنام خدا

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۲۰

۱) نقطه $(4, 1)$ از معادله خطی عبور می کند

الف) $\begin{vmatrix} 5 \\ -2 \end{vmatrix}$ (۲)

$$m = \frac{2+2}{4-5} = -4 \quad (y-2) = -4(x-4)$$

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

ب) $2y + 2x = 1$ معادله

$$m = \frac{-2}{2} = -1 \quad (y-2) = -1(x-4) \rightarrow y = -x + 6$$

ج) $x + 3y = 1$ معادله

$$m = -\frac{1}{3} \quad m' = +3 \quad (y-2) = 3(x-4) \rightarrow y = 3x - 10$$

د) $\frac{\pi}{3}$ و $\frac{\pi}{6}$ زاویه

$$\frac{\pi}{3} \rightarrow \gamma \rightarrow \tan \gamma = \frac{\sin \gamma}{\cos \gamma} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \sqrt{3}$$

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

۲) $\begin{vmatrix} 2 \\ 3 \end{vmatrix}$ (۲)

الف) $d = \sqrt{(\Delta x)^2 + (\Delta y)^2} = \sqrt{3^2 + (-4)^2} = \sqrt{25} = 5$ (۲)

ب) $3x + 4y = 3$ معادله

$$d = \frac{|2+12-3|}{\sqrt{3^2+4^2}} = \frac{11}{5}$$

$$x_n + y = 1 \quad \text{و} \quad y + x_n = 2 \quad (3)$$

الف) $x_n + y = \frac{1+1}{2} = x_n + y = 1$

ب) $\frac{|1-1|}{\sqrt{1^2+1^2}} = \frac{0}{\sqrt{2}} = 0$

ج) $x_n - y = 1$ و $x_n + y = 2$

د) $\frac{|x_n - y - 1|}{\sqrt{1+1}} = \frac{|x_n + y - 2|}{\sqrt{1+1}}$

هـ) $x_n - y - 1 = x_n + y - 2 \rightarrow x - y = -1$
 $x_n - y - 1 = -x_n - y + 2 \rightarrow x + y = 3$

و) $y = x_n + 1$ و $y - x_n = 2$

ز) $y = x_n + 1 \rightarrow m = 1$
 $y - x_n = 2 \rightarrow m' = 2$
 $\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right|$

ح) $\left| \frac{1 - (-2)}{1 + (-2)} \right| = 3 \rightarrow \tan \alpha = 3 \rightarrow \alpha = 71.5^\circ$

ط) $B = \frac{1}{1 - \frac{1 \cdot 2}{1 \cdot 2}} = 1$

ي) $B \begin{vmatrix} -1 \\ 1 \end{vmatrix}$ و $A \begin{vmatrix} 1 \\ -1 \end{vmatrix}$

ك) $d = \sqrt{(-1)^2 + (1)^2} = 1$

ل) $\mu \begin{vmatrix} -\frac{1+2}{2} \\ \frac{1-2}{2} \end{vmatrix} = -1$
 $\frac{1-2}{2} = 1$

م) $\frac{1}{1 - \frac{1 \cdot 2}{1 \cdot 2}} = 1$

ن) $\frac{1}{1 - \frac{1 \cdot 2}{1 \cdot 2}} = 1$

$$\begin{vmatrix} -1 & 1 \\ -1 & 3 \end{vmatrix} \begin{vmatrix} -2 \\ 3 \end{vmatrix} \begin{vmatrix} 3 \\ 1 \end{vmatrix}$$

$$a_1 \begin{vmatrix} \frac{-1 \cdot 2 + 3}{3} & 5-3 \\ \frac{-1 \cdot 3 + 3 + 1}{3} & 5-3 \end{vmatrix}$$

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انف (مردود)
5
M $\begin{vmatrix} -2 \\ -3 \end{vmatrix}$

$$S = \frac{1}{2} \begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -1 & -1 & 3 \end{vmatrix} \Rightarrow$$

(-S) ضلع:

$$\frac{1}{2} (9 - 10 + 24 + 3 + 2 + 39) = 41$$

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

①

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

الف) قرینه نسبت به x

5

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

ب) قرینه نسبت به y

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

ج) قرینه نسبت به مرکز دایره

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

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

②

$$x' = x-3 \rightarrow x = x'+3$$

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

انف (مردود)

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$$\hookrightarrow \frac{2x'+2}{x'-1}$$

$$x' = x-3 \rightarrow x = x'+3$$

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

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

$$\frac{y'+5}{x'}$$

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

→

$$19x + 19y = 1$$

$$19x - 38y = 19$$

$$\frac{19x - 38y = 19}{19y = -1} \rightarrow y = -\frac{1}{19}, x = \frac{-12}{-19}$$

: (1)

(2)

$$x = \frac{\begin{vmatrix} 19 & 1 \\ -2 & 1 \end{vmatrix}}{\begin{vmatrix} 19 & 19 \\ 1 & -2 \end{vmatrix}} = \frac{18}{19}$$

: (2)

$$y = \frac{\begin{vmatrix} 19 & 1 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 19 & 19 \\ 1 & -2 \end{vmatrix}} = -\frac{1}{19}$$