

۱۹,۷۵

نقطه $\left[\begin{smallmatrix} 2 \\ 1 \end{smallmatrix} \right]$

الف) $y - y_1 = m(x - x_1)$
 $y - 1 = m(x - 2)$
 $2 + 2 = \frac{2}{-1} \cdot \frac{2}{-1} - 1$
 $y - 1 = m(x - 2)$
 $2 + 2 = -2(x - 2)$
 $y - 1 = -2(x - 2)$
 $y - 1 = -2x + 4$
 $y = -2x + 5$

ب) $y - y_1 = m(x - x_1)$
 $y - 2 = -c(x - 4)$
 $y = -cx + 4c + 2$
 $1 + cy = 1 \rightarrow \frac{1}{c} = \frac{1}{c}$
 $y - y_1 = m(x - x_1) = y - 2 = c(x - 4) \Rightarrow y = cx - 4c + 2$

ج) $y - y_1 = m(x - x_1)$
 $y - 2 = \sqrt{c}(x - 4) \Rightarrow y = \sqrt{c}x - 4\sqrt{c} + 2$

نقطه $\left[\begin{smallmatrix} 2 \\ 1 \end{smallmatrix} \right]$

الف) $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} = \sqrt{(2+1)^2 + (1-0)^2} = \sqrt{9+1} = \sqrt{10}$

ب) $\frac{|cx_1 + 2y_1 - c|}{\sqrt{c^2 + 2^2}} = \frac{|4 + 2 - c|}{\sqrt{c^2 + 4}} = \frac{10}{\sqrt{c^2 + 4}} = \sqrt{10}$

$2x + cy = 4$, $2x + 4y = 8$

الف) $\frac{1}{c} = \frac{1}{c}$
 $2x + cy = 4$
 $2x + 4y = 8$
 $\frac{c_1 + c_2}{2} = \frac{-12 - 8}{2} = -10$
 $2x + 4y - 12 = 0$

ب) $\frac{|c_1 - c_2|}{\sqrt{c_1^2 + c_2^2}} = \frac{|-12 + 8|}{\sqrt{16 + 16}} = \frac{4}{\sqrt{32}} = \frac{1}{\sqrt{2}}$

$2x + cy = c \rightarrow 2x + cy - c = 0$

$2x - 2y = 1 \rightarrow 2x - 2y - 1 = 0$

$2x + cy - c = 2x - 2y - 1 \rightarrow -x + 2y - 2 = 0$

$\frac{|2x + cy - c|}{\sqrt{c^2}} = \frac{|2x - 2y - 1|}{\sqrt{5}}$

$2x + cy - c = -2x + 2y + 1 \rightarrow 4x + y - 3 = 0$

$y - 2x = 0$

$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| = \left| \frac{2 + c}{1 - 4} \right| = \left| \frac{c}{-3} \right| = 1 \Rightarrow \alpha = 45^\circ$

$y + 2x = c$

$c = -c$

$$A \begin{bmatrix} 1 \\ -2 \end{bmatrix} \quad B \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

الف) المسافة : $\sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} = \sqrt{(1+2)^2 + (-2-1)^2} = \sqrt{4+9} = \sqrt{13} = (13)$

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ب) المتجه : $\begin{bmatrix} \frac{x_1 + x_2}{2} \\ \frac{y_1 + y_2}{2} \end{bmatrix} = \begin{bmatrix} \frac{1+2}{2} \\ \frac{-2+1}{2} \end{bmatrix} = \begin{bmatrix} 1.5 \\ -0.5 \end{bmatrix}$

$$\begin{bmatrix} 1 \\ -2 \end{bmatrix} \quad \begin{bmatrix} 2 \\ -1 \end{bmatrix} \quad \begin{bmatrix} -1 \\ 1 \end{bmatrix}$$

الف) المتوسط = $\begin{bmatrix} \frac{x_1 + x_2 + x_3}{3} \\ \frac{y_1 + y_2 + y_3}{3} \end{bmatrix} = \begin{bmatrix} \frac{1+2-1}{3} \\ \frac{-2-1+1}{3} \end{bmatrix} = \begin{bmatrix} 0 \\ -0.67 \end{bmatrix}$

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ب) المجموع : $\begin{vmatrix} 1 & -2 & -1 \\ 1 & 2 & -1 \\ 1 & 1 & 1 \end{vmatrix} \times \frac{1}{3} = |1 - 10 + 24 + 20 + 2| \times \frac{1}{3} = (48)$

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

ج) التحويل : $x = \frac{y+1}{y-2} \Rightarrow x - y = -\frac{x-1}{x-2}$

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

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الف) التحويل : $-y = \frac{x+1}{x-2} \Rightarrow x = \frac{-y-1}{-y-2} = \frac{y+1}{y+2}$

ب) التحويل : $y = \frac{-x+1}{-x-2} = \frac{x-1}{x+2}$

د) التحويل : $-x = \frac{-y+1}{-y-2} \Rightarrow x = \frac{y-1}{y+2}$

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

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

$$\begin{bmatrix} 1 \\ -2 \end{bmatrix} : \text{مبدأ}$$

الف) $x' = x+2 \Rightarrow x = x'+2$
 $y' = y+2 \Rightarrow y = y'-2$
 $\Rightarrow y'-2 = \frac{x'+2+1}{x'+2-2} \Rightarrow y' = \frac{x'+3}{x'}$

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

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

$$\begin{cases} 2x + 3y = 1 \\ x - 2y = 1 \end{cases}$$

الف) التحويل : $\begin{cases} 2x + 3y = 1 \\ x - 2y = 1 \end{cases} \xrightarrow{x(-2)} \begin{cases} 2x + 3y = 1 \\ -5y = -1 \end{cases} \Rightarrow y = \frac{1}{5}$
 $x = 2y + 1 = \frac{2}{5} + 1 = \frac{7}{5}$
 $\Rightarrow \begin{bmatrix} \frac{7}{5} \\ \frac{1}{5} \end{bmatrix}$

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ب) التكرار : $\begin{cases} 2x + 3y = 1 \\ x - 2y = 1 \end{cases} \Rightarrow \text{مخرج : } -10 - 2 = -12 \Rightarrow x = -\frac{-12}{-19} = \frac{12}{19}$
 $y = \frac{1-2x}{-2} = \frac{1-2 \cdot \frac{12}{19}}{-2} = \frac{1-\frac{24}{19}}{-2} = \frac{\frac{19-24}{19}}{-2} = \frac{-5}{19}$
 $\Rightarrow \begin{bmatrix} \frac{12}{19} \\ -\frac{5}{19} \end{bmatrix}$