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ازم آیت الله العظمی

SUBJECT

Year:

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$$\text{الف)} m = -\frac{f}{1} = -f \rightarrow y = -fx + 1 \quad m = -\frac{y}{x} = -f \rightarrow y = -fx + 1 \quad (1)$$

$$\text{ج)} m = -\frac{1}{x} \rightarrow m' = -x \rightarrow y = -\frac{1}{2}x - 1 \Rightarrow m = \tan \frac{\pi}{4} = 1 \rightarrow y = x - 1 \quad (2)$$

$$\text{الف)} \sqrt{3^2 + 4^2} = 5 \Rightarrow \frac{|3x + 4y - 12|}{\sqrt{3^2 + 4^2}} = \frac{5}{5} = 1 \quad (3)$$

$$x \rightarrow 3x + 4y = 12 \quad \text{یا} \quad 3x + 4y = 10 \Rightarrow \frac{|12 - 10|}{\sqrt{3^2 + 4^2}} = \frac{2}{5} = \frac{2\sqrt{5}}{10} \quad (4)$$

$$\frac{|3x - 2y - 1|}{\sqrt{3^2 + 2^2}} = \frac{|3x + 2y - 3|}{\sqrt{3^2 + 2^2}} \Rightarrow \begin{cases} 3x - 2y - 1 = -3x - 2y + 3 \Rightarrow 6x = 4 \Rightarrow x = \frac{2}{3} \\ 3x - 2y - 1 = 3x + 2y - 3 \Rightarrow -4y = -2 \Rightarrow y = \frac{1}{2} \end{cases} \quad (5)$$

$$m_1 = -\frac{3}{4} / m_2 = 2 \rightarrow \tan \alpha = \left| \frac{-\frac{3}{4} - 2}{1 - (-\frac{3}{2})} \right| = 1 \Rightarrow \alpha = \frac{\pi}{4} \quad (6)$$

$$\text{الف)} \sqrt{1^2 + 4^2} = 5 \Rightarrow \left(\frac{-5 + 3}{5}, \frac{4 - 2}{5} \right) = \left(-\frac{2}{5}, \frac{2}{5} \right) \quad (7)$$

$$\text{الف)} \frac{3 - 2 - 10}{5} = -\frac{9}{5} \quad \frac{1 + 3 - 13}{5} = -\frac{9}{5} \Rightarrow \frac{1}{5} \left| \frac{-9}{-9} \right| = \frac{1}{5} \left| \frac{10 - 2 - 39 - 9 + 10 - 24}{-9} \right| = \frac{1}{5} \left| \frac{44}{-9} \right| = \frac{44}{45} \quad (8)$$

$$\text{الف)} -y = \frac{2x + 1}{x - 2} \rightarrow y = \frac{2x + 1}{2 - x} \Rightarrow y = \frac{2x + 1}{-x + 2} \quad (9)$$

$$\Rightarrow x = \frac{2y + 1}{y - 2} \rightarrow y = \frac{2x + 1}{x - 2} \Rightarrow y = \frac{2x + 1}{x - 2} \quad (10)$$

$$\text{الف)} x' = x - 2 \rightarrow x = x' + 2 \Rightarrow y' = y + 2 \Rightarrow y = y' - 2 \Rightarrow y' - 2 = \frac{x' + 2 + 1}{x' + 2 - 2} \Rightarrow y' - 2 = \frac{x' + 3}{x'} \Rightarrow y' = \frac{x' + 3}{x'} + 2 = \frac{x' + 3 + 2x' + 4}{x'} = \frac{3x' + 7}{x'} \quad (11)$$

$$\text{ب)} x' = x - 2 \rightarrow x = x' + 2, y' = y - 2 \rightarrow y = y' + 2 \Rightarrow y' + 2 = \frac{x' + 2 + 1}{x' + 2 - 2} \Rightarrow y' + 2 = \frac{x' + 3}{x'} \Rightarrow y' = \frac{x' + 3}{x'} - 2 = \frac{x' + 3 - 2x' - 4}{x'} = \frac{-x' - 1}{x'} \quad (12)$$

$$\text{الف)} \begin{cases} 3x + 4y = 2 \\ -3x + 10y = -2 \end{cases} \Rightarrow 14y = -1 \Rightarrow y = -\frac{1}{14} \quad (13)$$

$$x + \frac{5}{14} = \frac{19}{14} \Rightarrow x = \frac{14}{14} = 1 \quad (14)$$

$$\Rightarrow \begin{vmatrix} 3 & 4 \\ 1 & -10 \end{vmatrix} = -34 \quad \begin{vmatrix} 4 & 2 \\ -10 & 1 \end{vmatrix} = -42 \quad (15)$$

$$\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix} = 1 \Rightarrow x = -\frac{14}{-14} = 1 \quad (16)$$

$$y = \frac{1}{-14} = -\frac{1}{14} \quad (17)$$

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