

برای پاسخ به سوال ۱۵. ...

$$m = \frac{-2-2}{-4-4} = \frac{-4}{-8} = -\frac{1}{2} \dots y-2 = -\frac{1}{2}(x-4) \Rightarrow y = -\frac{1}{2}x + 4 \dots (الف) \textcircled{۱}$$

$$m = \frac{-4}{-2} = 2 \dots y-2 = 2(x-4) \Rightarrow y = 2x-6 \dots (ب) \textcircled{۲}$$

$$m = \frac{-1}{-3} \Rightarrow m = \frac{1}{3} \dots y-2 = \frac{1}{3}(x-4) \Rightarrow y = \frac{1}{3}x - \frac{2}{3} \dots (ج)$$

$$\tan \frac{\pi}{6} = \frac{1}{\sqrt{3}} \Rightarrow \tan 60 = \sqrt{3} = m \Rightarrow y-2 = \sqrt{3}(x-4) \Rightarrow y = \sqrt{3}x - 4\sqrt{3} + 2 \dots (د)$$

$$d = \sqrt{(2-(-1))^2 + (2-2)^2} \Rightarrow d = \sqrt{9+0} = 3 \dots (الف) \textcircled{۲}$$

$$d = \frac{|3x+4y-3|}{\sqrt{9+16}} = \frac{|3|}{5} = \frac{3}{5} \dots (ب) \textcircled{۳}$$

$$\begin{cases} 4x+6y=1 \\ 2x+3y=6 \end{cases} \Rightarrow \begin{cases} 4x+6y=1 \\ 4x+6y=12 \end{cases} \Rightarrow \frac{1-12}{2} = 4x+6y \Rightarrow 4x+6y-10=0 \dots (الف) \textcircled{۳}$$

$$\begin{cases} 4x+6y=1 \\ 2x+3y=6 \end{cases} \Rightarrow \begin{cases} 4x+6y=1 \\ 4x+6y=12 \end{cases} \Rightarrow \frac{|1-12|}{\sqrt{16+36}} = \frac{|-11|}{\sqrt{52}} = \frac{11}{2\sqrt{13}} \dots (ب) \textcircled{۴}$$

$$\frac{|3x-2y-1|}{\sqrt{9+4}} = \frac{|2x+3y-3|}{\sqrt{4+9}} \Rightarrow |3x-2y-1| = |2x+3y-3| \dots (الف) \textcircled{۴}$$

$$\Rightarrow \begin{cases} 3x-2y-1 = 2x+3y-3 \Rightarrow x-5y = -2 \\ 3x-2y-1 = -(2x+3y-3) \Rightarrow 5x+y = 4 \end{cases} \dots (ب) \textcircled{۵}$$

$$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| \Rightarrow \left| \frac{1 - (-3)}{1 + (-3)(1)} \right| = \left| \frac{4}{-2} \right| = |-2| = 2 \Rightarrow \tan \alpha = 2 \dots \textcircled{5}$$

$$\Rightarrow \tan \alpha = 2 \Rightarrow \alpha = 2\omega$$

$$y + 3x = 5 \Rightarrow m = -3 \dots y - 2x = 0 \Rightarrow m = 2 \dots \beta = (180 - \alpha) \Rightarrow \beta = 13\omega$$

$$d = \sqrt{(4+0)^2 + (-2-4)^2} = \sqrt{16 + 36} = \sqrt{52} = 2\sqrt{13} \dots \textcircled{6}$$

$$M \begin{vmatrix} \frac{10-0}{2} \\ \frac{-2+5}{2} \end{vmatrix} = -1 \Rightarrow M(-1, 1) \dots \textcircled{5}$$

$$x_M = \frac{10 - 2 - 10}{2} = -3 \dots \textcircled{7}$$

$$\Rightarrow M(-3, -3)$$

$$y_M = \frac{1 + 10 - 10}{2} = 0.5 \dots \textcircled{5}$$

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$$S = \frac{1}{1} \begin{vmatrix} 10 & 1 & 1 \\ -2 & 2 & 1 \\ -10 & -12 & 1 \end{vmatrix} \Rightarrow \frac{1}{1} (9 - 10 + 14 + 10 + 12 + 1) = 32$$

$$\text{1) } y \rightarrow -y \Rightarrow -y = \frac{2x+1}{x-3} \Rightarrow x \rightarrow -x \Rightarrow y = \frac{-2x+1}{-x-3} \dots \textcircled{5} \textcircled{1}$$

$$\text{2) } \begin{cases} x \rightarrow y \\ y \rightarrow x \end{cases} \Rightarrow x = \frac{2y+1}{y-3} \Rightarrow y = \frac{2x+1}{x-3} \dots \textcircled{5} \begin{cases} x \rightarrow -y \\ y \rightarrow -x \end{cases} \Rightarrow -x = \frac{-2y+1}{-y-3} \Rightarrow y = \frac{-2x+1}{-x-3}$$

$$\begin{cases} x' = x - 3 \Rightarrow x = x' + 3 \\ y' = y + 3 \Rightarrow y = y' - 3 \end{cases} \dots y = \frac{2x+1}{x-3} \Rightarrow y' - 3 = \frac{2(x'+3)+1}{x'-1} \dots \textcircled{9}$$

$$\Rightarrow y' - 3 = \frac{2x' + 7}{x' - 1} \Rightarrow y' - 3 = \frac{2x' + 5}{x' - 1} \dots \textcircled{5}$$

$$\Rightarrow y' = \frac{2x' + 5}{x' - 1} + 3 \Rightarrow y' = \frac{5x' + 8}{x' - 1}$$

$$\begin{cases} x' = x - 3 \Rightarrow x = x' + 3 \\ y' = y - 3 \Rightarrow y = y' + 3 \end{cases} \dots y = \frac{2x+1}{x-3} \Rightarrow y' + 3 = \frac{2(x'+3)+1}{x'-1} \Rightarrow y' = \frac{2x'+7}{x'-1} \dots \textcircled{9}$$

$$\begin{cases} 3x + 4y = 2 \\ x - 5y = 1 \end{cases} \quad \begin{cases} 3x + 2y = 2 \\ -3x + 15y = -3 \end{cases} \quad \text{(الف) (10)}$$

$$19y = -1 \Rightarrow y = \frac{-1}{19} \text{ , } x = \frac{14}{19}$$

$$x = - \frac{\begin{vmatrix} 4 & 2 \\ -5 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = - \frac{4 - (-10)}{-15 - 4} = - \frac{14}{-19} = \frac{14}{19} \quad \text{(ب)}$$

$$y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = \frac{3 - 2}{-15 - 4} = \frac{1}{-19}$$