

مسایا جاری

①

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

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$$y - y_1 = m(x - x_1)$$

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

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

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

$$y = -\frac{1}{3}x + \frac{10}{3}$$

الف)

$$\frac{a}{a'} = \frac{b}{b'} = \frac{c}{c'} \rightarrow$$

$$\begin{vmatrix} a & b \\ a' & b' \end{vmatrix} = 0$$

ب)

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

$$y - y_1 = m(x - x_1)$$

$$y - 2 = -\frac{1}{3}x + \frac{4}{3} \rightarrow y = -\frac{1}{3}x + \frac{10}{3}$$

$$3y = -x + 10 \rightarrow y = -\frac{x}{3} + \frac{10}{3}$$

ج)

$$m_1 = -\frac{1}{3} \rightarrow m_2 = \frac{1}{3}$$

$$y - y_1 = m(x - x_1) \rightarrow y - 2 = \frac{1}{3}(x - 4) \Rightarrow y = \frac{1}{3}x + \frac{2}{3}$$

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

$$\tan \alpha = m \rightarrow \tan \frac{\pi}{4} = \sqrt{3} \rightarrow y - 2 = \sqrt{3}(x - 4)$$

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

د)

$$a) |AB| = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2} \rightarrow \sqrt{(1-2)^2 + (-1-1)^2} = \sqrt{5} = \Delta \quad (2)$$

$$b) \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} \rightarrow \frac{|1 \cdot 1 + 2 \cdot (-1) - 3|}{\sqrt{1 + 4}} = \frac{1\Delta}{\Delta} = 1$$

لـ ١، ٢، ٣

$$2x \begin{cases} 2x + 4y = 12 \rightarrow x + 2y = 6 \\ 2x + 4y = 10 \rightarrow x + 2y = 5 \end{cases} \quad a) \quad ax + by = \frac{c + c'}{2}$$

ا ب (3)

$$b) \begin{cases} 2x + 4y = 12 \\ 2x + 4y = 10 \end{cases} \rightarrow \boxed{2x + 4y = 10} \quad d = \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|10 - 12|}{\sqrt{1 + 4}} = \frac{2}{\sqrt{5}}$$

$$\frac{|ax + by - d|}{\sqrt{a^2 + b^2}} = \frac{|a'x + b'y - d'|}{\sqrt{(a')^2 + (b')^2}} \rightarrow \frac{|3x - 2y - 1|}{\sqrt{1 + 4}} = \frac{|2x + 3y - 14|}{\sqrt{13}} \quad (4)$$

$$\rightarrow \begin{cases} 3x - 2y - 1 = 2x + 3y - 14 \rightarrow x - 5y = -13 \\ 3x - 2y - 1 = -2x - 3y + 14 \rightarrow 5x + y = 15 \end{cases}$$

$$\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| \quad \begin{cases} y + 3x = 12 \rightarrow y = -3x + 12 \rightarrow m = -3 \\ y - 2x = 5 \rightarrow y = 2x + 5 \rightarrow m = 2 \end{cases} \quad (5)$$

$$\tan \alpha = \left| \frac{2 + 3}{1 - 6} \right| = \left| \frac{5}{-5} \right| = 1$$

$$a) |AB| = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2} = \sqrt{(1 - (-1))^2 + (-2 - 2)^2} = \sqrt{1 + 16} = \sqrt{17} = 10$$

$$b) M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right) = M\left(\frac{-1 + 1}{2}, \frac{1 + 1}{2}\right) = M(0, 1) \quad (6)$$

$$a) \frac{x_1 + x_2 + x_3}{3} = \frac{-1 + 1 + 1}{3} = \frac{1}{3} = -\frac{9}{3} = -3$$

$$y_0 = \frac{y_1 + y_2 + y_3}{3} = \frac{-1 + 1 + 1}{3} = \frac{1}{3} = -\frac{9}{3} = -3 \quad \text{ب } (-3, -3) \quad (7)$$

$$b) \frac{1}{3} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix} = \frac{1}{3} \begin{vmatrix} -1 & 1 & 1 \\ 1 & 1 & 1 \\ -1 & -1 & 1 \end{vmatrix} = \frac{1}{3} (-1 + 1 + 1 + 1 + 1 + 1) = \frac{1}{3} (6) = 2$$

$$①) y_s \frac{2x+1}{x-2}$$

$$أ) y \rightarrow -y \rightarrow -y_s \frac{2x+1}{x-2}$$

$$ب) x \rightarrow -x \rightarrow y_s \frac{-2x+1}{-x-2}$$

$$ج) \begin{cases} x \rightarrow y \\ y \rightarrow x \end{cases} \rightarrow x_s \frac{2y+1}{y-2} \rightarrow y_s \frac{2x+1}{x-2}$$

$$د) \begin{cases} x \rightarrow -y \\ y \rightarrow -x \end{cases} \rightarrow -x_s \frac{-2y+1}{-y-2} \rightarrow y_s \frac{2x-1}{x+2}$$

$$● ②) أ) \begin{cases} x' = x-2 \\ y' = y+2 \end{cases} \rightarrow \begin{cases} x = x'+2 \\ y = y'+2 \end{cases} \rightarrow y'-2_s \frac{2(x'+2)+1}{(x'+2)-2} \rightarrow y'_s \frac{2x'+5}{x'-1} + 2$$

$$ب) \begin{cases} x' = x-2 \\ y' = y-2 \end{cases} \rightarrow \begin{cases} x = x'+2 \\ y = y'+2 \end{cases}$$

$$\rightarrow y'+2_s \frac{2(x'+2)+1}{(x'+2)-2} \rightarrow y'_s \frac{2x'+5}{x'-1} - 2 \rightarrow \frac{2x'+V-2x'}{x'} = y'_s \left(\frac{V}{x'} \right)$$

③

$$أ) \begin{cases} 3x+5y = 1 \\ x-2y = 1 \end{cases} \rightarrow \begin{cases} 3x+5y = 1 \\ -x+2y = 1 \end{cases}$$

$$● -3x \left(\begin{cases} 3x+5y = 1 \\ x-2y = 1 \end{cases} \rightarrow \begin{cases} 19y = -1 \\ x = \frac{19}{19} \end{cases} \right)$$

$$ب) \begin{cases} 3x+5y = 1 \\ x-2y = 1 \end{cases}$$

$$x_s \left| \begin{array}{cc|c} b & c & \\ b' & c' & \end{array} \right| = \frac{\left| \begin{array}{cc|c} 5 & 1 & \\ -2 & 1 & \end{array} \right|}{\left| \begin{array}{cc|c} 3 & 5 & \\ 1 & -2 & \end{array} \right|} = \frac{5 - (-1)}{-10 - 5} = \frac{-19}{-15} = \frac{19}{15}$$

$$y_s \left| \begin{array}{cc|c} a & c & \\ a' & c' & \end{array} \right| = \frac{\left| \begin{array}{cc|c} 3 & 1 & \\ 1 & 1 & \end{array} \right|}{\left| \begin{array}{cc|c} 3 & 5 & \\ 1 & -2 & \end{array} \right|} = \frac{3-1}{-10-5} = \frac{2}{-15} = -\frac{2}{15}$$