

①

$$\text{الف)} \quad m = \frac{-1-2}{2-4} = \frac{-3}{-2} = \frac{3}{2} \Rightarrow -3x + 6 = y \Rightarrow -3x + b = 2 \Rightarrow b = 1 \Rightarrow -3x + 1 = y$$

$$\text{ب)} \quad m = \frac{-2}{1} = -2 \Rightarrow -2x + b = y \Rightarrow -1 + b = 2 \Rightarrow b = 3 \Rightarrow -2x + 3 = y$$

$$\text{ج)} \quad m = \frac{-1}{2} \Rightarrow m' = 2 \Rightarrow 2x + b = y \Rightarrow 1 + b = 2 \Rightarrow b = 1 \Rightarrow 2x + 1 = y$$

$$\text{د)} \quad m = \tan \frac{\pi}{4} = 1 \Rightarrow x + b = y \Rightarrow 1 + b = 2 \Rightarrow b = 1 \Rightarrow x + 1 = y$$

②

$$\text{الف)} \quad \sqrt{(2+1)^2 + (2-3)^2} = \sqrt{9+1} = \sqrt{10} = 0$$

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

③

$$\text{الف)} \quad 2x + 3y = 0$$

$$\text{ب)} \quad 2x + 3y = 2, \quad 2x + 3y = 7 \quad \frac{|7-2|}{\sqrt{2^2+3^2}} = \frac{5}{\sqrt{13}}$$

$$\text{ج)} \quad \frac{|2x - 3y - 1|}{\sqrt{2^2+3^2}} = \frac{|2x + 3y - 12|}{\sqrt{2^2+3^2}}$$

$$\text{الف)} \quad 2x - 3y - 1 = -2x - 3y + 12 \Rightarrow 4x + y = 13$$

$$\text{ب)} \quad 2x - 3y - 1 = 2x + 3y - 12 \Rightarrow -6y = -11 \Rightarrow y = \frac{11}{6}$$

$$\text{ج)} \quad \tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| \quad m = \frac{-2}{1}, \quad m' = \frac{2}{1} \Rightarrow \tan \alpha = \left| \frac{0}{-1} \right| = 1$$

$$\alpha = 45^\circ$$

④

الف) $\sqrt{(3+1)^2 + (1+2)^2} = \sqrt{4^2 + 3^2} = 5$ ب) د' $\left| \begin{array}{l} \frac{r-\Delta}{r} = -1 \\ \frac{r-r}{r} = +1 \end{array} \right|$

⑤

الف) $x_m = \frac{-10 - 1 + 3}{3} = \frac{-8}{3} = -\frac{8}{3}$ ب) $\left| \begin{array}{ccc|c} -10 & -1 & 3 & 0 \\ -1 & 3 & 1 & 0 \\ 1 & 1 & 1 & 0 \end{array} \right| \times \frac{1}{3}$

①

الف) $y = \frac{-2n-1}{3-2n}$ ب) $y = \frac{1-2n}{-2n-3}$ ج) $n = \frac{xy+1}{xy-3} \Rightarrow y = \frac{2n+1}{2n-3}$

د) $-y = \frac{-2n-1}{3-2n}$

⑨

الف) $\left. \begin{array}{l} n' = n-2 \Rightarrow x+2 = n' \\ y' = y-2 \Rightarrow y'+2 = y \end{array} \right\} \Rightarrow y'+2 = \frac{2(n'+2)+1}{(n'+2)-2}$

$\Rightarrow \frac{2n'+4}{n'} - 2 = \frac{2n'+4-2n'}{n'} = \frac{4}{n'}$

10)

الف) $\begin{cases} 3n+2y=2 \\ n-5y=1 \end{cases} \Rightarrow \begin{cases} 3n+2y=2 \\ -3n+15y=-3 \end{cases} \Rightarrow 17y=-1 \Rightarrow y = -\frac{1}{17}$
 $n = \frac{14}{17}$

ب)

$\begin{cases} 3n+2y=2 \\ n-5y=1 \end{cases} \Rightarrow n = -\frac{\begin{vmatrix} 2 & 2 \\ 1 & -5 \end{vmatrix}}{\begin{vmatrix} 3 & 2 \\ 1 & -5 \end{vmatrix}} = \frac{12}{17} \quad y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & -5 \end{vmatrix}}{\begin{vmatrix} 3 & 2 \\ 1 & -5 \end{vmatrix}} = -\frac{1}{17}$

الف) $\left. \begin{array}{l} n' = n+2 \\ y' = y+2 \end{array} \right\} \Rightarrow \begin{array}{l} n'+2 = n \\ y'-2 = y \end{array} \Rightarrow y'-2 = \frac{2(n'+2)+1}{n'+2-2}$

$= \frac{2n'+4}{n'-1} + 2 = \frac{2n'+4+2n'-2}{n'-1} = \frac{4n'+2}{n'-1} = y'$