

الف) $m = \frac{2+2}{2-5} = -2 \quad y-2 = -2(x-2) \rightarrow y = -2x+6$

ب) $y = -3x - \frac{1}{3} \quad m = -3 \rightarrow y-2 = -3(x-2) \rightarrow y = -3x+8$

ج) $y = -\frac{1}{2}x + \frac{1}{2} \rightarrow m = -\frac{1}{2} \rightarrow m' = 2 \rightarrow y-2 = 2(x-2) \rightarrow y = 2x-2$

د) $m = \tan \frac{\pi}{4} = 1 \quad y-2 = 1(x-2) \rightarrow y = x$

الف) $\sqrt{(y_1-y_2)^2 + (x_1-x_2)^2} = \sqrt{(1-3)^2 + (-1-2)^2} = \sqrt{20} = 2\sqrt{5}$

ب) $d = \frac{|ax_0+by_0+c|}{\sqrt{a^2+b^2}} = \frac{|2(2)+1(3)+3|}{\sqrt{4+1}} = \frac{10}{\sqrt{5}} = 2\sqrt{5}$

الف) $\begin{cases} 2x+3y=1 \\ 2x+3y=4 \end{cases} \rightarrow \begin{cases} 2x+3y=1 \\ 2x+3y=4 \end{cases} \rightarrow 2x+3y=5$

ب) $d = \frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|1-4|}{\sqrt{4+9}} = \frac{3}{\sqrt{13}}$

$\frac{|ax+by-c|}{\sqrt{a^2+b^2}} = \frac{|a'x+b'y-c'|}{\sqrt{(a')^2+(b')^2}} \rightarrow \frac{|2x-3y-1|}{\sqrt{4+9}} = \frac{|2x+3y-3|}{\sqrt{4+9}} \rightarrow |2x-3y-1| = |2x+3y-3|$

$2x-3y-1 = 2x+3y-3 \rightarrow x-3y = -1$

$2x-3y-1 = -(2x+3y-3) \rightarrow 4x = 4 \rightarrow x = 1$

$\begin{cases} y = 2x+5 \\ y = -3x+2 \end{cases} \rightarrow \begin{cases} m = 2 \\ m' = -3 \end{cases} \quad \tan \alpha = \left| \frac{m-m'}{1+mm'} \right| = \left| \frac{2+3}{1-6} \right| = |-1| = 1$

$\Rightarrow \alpha = 45^\circ \rightarrow \frac{\pi}{4}$

الف) $\sqrt{(y_1 - y_2)^2 + (x_1 - x_2)^2} = \sqrt{(3+2)^2 + (-5-1)^2} = \sqrt{25+36} = 10$ ب) $\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) \Rightarrow \left[\frac{3-5}{2}, \frac{2-7}{2}\right] \Rightarrow [-1, -1]$	6
الف) $x_G = \frac{x_1+x_2+x_3}{3} = \frac{-6-2+3}{3} = -1$ $y_G = \frac{y_1+y_2+y_3}{3} = \frac{-13+3+1}{3} = -3$ $\left \begin{matrix} -3 \\ -3 \end{matrix} \right$ ب) $S = \frac{1}{6} \begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -6 & -13 & 1 \end{vmatrix} = \frac{1}{6} (9-10+13+6+2+39) = 8$	7
الف) $-y = \frac{3x+1}{2x-3}$ ب) $y = \frac{-3x-1}{-2x+3}$ 2.) $x = \frac{3y+1}{2y-3} \rightarrow 2xy - 3x = 3y+1 \Rightarrow y = \frac{3x+1}{2x-3}$ 3.) $-x = \frac{-3y+1}{-2y-3} \rightarrow \frac{3x+1}{2x-3}$	8
الف) $x' = x-2 \Rightarrow x = x'+2$ $y' = y+3 \Rightarrow y = y'-3$ $\Rightarrow y'-3 = \frac{2(x'+2)+1}{x'+2-3} \rightarrow y'-3 = \frac{2x'+5}{x'-1} \rightarrow y' = \frac{2x'-1}{x'-1}$ ب) $x' = x-2 \rightarrow x = x'+2$ $y' = y-3 \rightarrow y = y'+3$ $\rightarrow y'+3 = \frac{2(x'+2)+1}{x'+2+3} \rightarrow y' = \frac{2x'+7}{x'+5} - \frac{2x'}{x'} \Rightarrow y' = \frac{7}{x'+5}$	9
الف) $3x+5y=2 \rightarrow 19y=-1$ $x-2y=1 \rightarrow y = -\frac{1}{19}$ $x = \frac{18}{19}$ ب) $x = \begin{vmatrix} 2 & 5 \\ -1 & 3 \end{vmatrix} = \frac{2+15}{-15-2} = -\frac{17}{17} = -1$ $y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 5 \\ 1 & -2 \end{vmatrix}} = \frac{3-2}{-15-2} = -\frac{1}{17}$	10