

۱۹، ۷۵
افزین

الف) $m = \frac{2-2}{8-2} = -2$ $y = ax + b$ $\xrightarrow{(4,2)}$ $2 = -4(2) + b \rightarrow b = 18$ $\Rightarrow y = -2x + 18$ ✓

ب) $2y + 4x + 1 = 0$ $\xrightarrow{\text{ضرب در ۲}}$ $\frac{-4}{2} = -2$ $\xrightarrow{(4,2)}$ $2 = -3(2) + b \rightarrow b = 14$ $\Rightarrow y = -2x + 14$ ✓

ج) $x + 3y = 1$ $\xrightarrow{\text{ضرب در ۳}}$ $\frac{-1}{3} = -\frac{1}{3}$ $\xrightarrow{(4,2)}$ $2 = 3(2) + b \rightarrow b = -10$ $\Rightarrow y = -\frac{1}{3}x - 10$ ✓ (۲)

د) $y - y_0 = m(x - x_0) \rightarrow y - 2 = \sqrt{3}(x - 2) \rightarrow y - 2 = \sqrt{3}x - 2\sqrt{3} \rightarrow y = \sqrt{3}x - 2\sqrt{3} + 2$ ✓
 $\frac{\pi}{3} = 40^\circ = \tan 40^\circ = \sqrt{3}$ ✓

الف) $\sqrt{(x-3)^2 + (-1-2)^2} = \sqrt{14+9} = 5$ ✓

ب) $\frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{3(2) + 4(3) - 2}{\sqrt{28}} = \frac{18}{\sqrt{28}} = \frac{9\sqrt{7}}{2\sqrt{7}} = \frac{9}{2}$ ✓

$\begin{cases} 2x + 3y - 4 = 0 \\ 5x + 4y - 12 = 0 \end{cases} \xrightarrow{\times 2} \begin{cases} 2x + 3y - 4 = 0 \\ 10x + 8y - 24 = 0 \end{cases}$

الف) $ax + by + \frac{c+c'}{2} = 5x + 4y + \frac{(-12-4)}{2} = 5x + 4y - 8 = 0$ ✓

ب) $\frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|-4+12|}{\sqrt{(5)^2+(4)^2}} = \frac{8}{\sqrt{41}} = \frac{8\sqrt{41}}{41}$ ✓

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

$\rightarrow |2x-3y-1| = |2x+3y-3| \rightarrow \begin{cases} 2x-3y-1 = 2x+3y-3 \rightarrow y = \frac{x}{3} + \frac{2}{3} \\ 2x-3y-1 = -(2x+3y-3) \rightarrow y = -2x + 4 \end{cases}$ ✓

$\tan \alpha = \left| \frac{m-m'}{1+mm'} \right| \rightarrow \tan \alpha = \left| \frac{-2-2}{1+(-4)} \right| = 1 \rightarrow \alpha = 45^\circ \leq \frac{\pi}{2}$ ✓

$\begin{cases} y = 2x + 1 \rightarrow m = 2 \\ y = 2x + 8 \rightarrow m = 2 \end{cases}$

الف) $\sqrt{(3-(-5))^2 + (-2-4)^2} = \sqrt{100} = 10$ ✓

ب) $\left(\frac{x_A + x_B}{2}, \frac{y_A + y_B}{2}\right) \rightarrow \left(\frac{-2}{2}, \frac{2}{2}\right) = (-1, 1)$ ✓

الف) $x_G = \frac{x_1 + x_2 + x_3}{3} = \frac{-10 - 2 + 3}{3} = -3$
 $y_G = \frac{y_1 + y_2 + y_3}{3} = \frac{-3 + 2 + 1}{3} = 0$
 $G(-3, 0)$ ✓

ب) $S = \frac{1}{3} \begin{vmatrix} 3 & -2 & -10 \\ 1 & 3 & -3 \\ 1 & 1 & 1 \end{vmatrix} = \frac{1}{3} (9 + 24 + (-10) + 30 + 39 + 3) = \frac{1}{3} \times 94 = 31\frac{1}{3}$ ✓

$y = \frac{2x+1}{x-3}$ سوال

الف) $-y = \frac{2x+1}{x-3} \rightarrow y = \frac{-2x-1}{x-3}$ ✓

ب) $y = \frac{-2x+1}{-2x-3}$ ✓

ج) $x = \frac{2y+1}{y-3} \rightarrow y = -\frac{-2x-1}{x-3} \Rightarrow y = \frac{2x+1}{x-3}$ ✓

د) $-x = \frac{-2y+1}{-2y-3} \rightarrow x = \frac{-2y+1}{2y+3} \rightarrow y = -\frac{2x-1}{2x+3}$ ✓

الف) $\begin{cases} x' = -x \\ y' = y - \beta \end{cases} \quad y = \frac{2x+1}{x-3} \xrightarrow{O(2,-3)} \begin{cases} x' = x-2 \\ y' = y+3 \end{cases} \rightarrow \begin{cases} x = x' + 2 \\ y = y' - 3 \end{cases} \rightarrow y' = \frac{2(x'+2)+1}{(x'+2)-3} + 3 = \frac{2x'+5}{x'-1} + 3$

ب) $y = \frac{2x+1}{x-3} \xrightarrow{O(3,2)} \begin{cases} x' = x-3 \\ y' = y-2 \end{cases} \rightarrow \begin{cases} x = x' + 3 \\ y = y' + 2 \end{cases} \rightarrow y' + 2 = \frac{2(x'+3)+1}{x'+3-3} + 1 \Rightarrow y' = \frac{2(x'+3)+1}{x'+3-3} + 1 - 2 = \frac{2(x'+3)+1}{x'+3-3} - 1$
 $y' = \frac{2x'+5}{x'-1} - 1$
 $y' = \frac{2x'+5 - (x'-1)}{x'-1} = \frac{x'+6}{x'-1}$
 $y' = \frac{V}{x'}$ ✓

الف) $\begin{cases} 3x + 4y = 2 \\ -3(x - 8y = 1) \end{cases} \rightarrow \begin{cases} 3x + 4y = 2 \\ -3x + 24y = -3 \end{cases} \xrightarrow{+} 28y = -1 \rightarrow y = -\frac{1}{28}$ ✓
 $\xrightarrow{\text{مقدار}}$ $3x - \frac{4}{28} = \frac{2}{28} \rightarrow x = \frac{2}{28} + \frac{4}{28} = \frac{6}{28} = \frac{3}{14}$ ✓

ب) $\begin{cases} 3x + 4y = 2 \\ x - 8y = 1 \end{cases}$

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

دترمینال $= \begin{vmatrix} 3 & 4 \\ 1 & -8 \end{vmatrix} = -24 - 4 = -28$

دترمینال $= \begin{vmatrix} 3 & 2 \\ -8 & 1 \end{vmatrix} = 3 + 16 = 19$ ✓

دترمینال $= \begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix} \rightarrow 3 - 2 = 1$ ✓