نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس .....

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الف) $m = \frac{y_A - y_B}{x_A - x_B} \to \frac{2-(-2)}{2-3} = -4 \to y - y_A = m(x - x_A) \to y - 2 = -4(x-3) \to y = -4x + 14$

ب) $2y + 9x = -1 \to m = -\frac{9}{2} = -3 \to y - 2 = -3(x-4) \to y = -3x + 14$

ج) $x + 3y = 1 \to m = -\frac{1}{3} \xrightarrow{m \cdot m' = -1} m' = 3 \to y - 2 = 3(x-4) \to y = 3x - 10$

د) $m = \tan\theta \xrightarrow{\theta = \frac{\pi}{3}} m = \sqrt{3} \to y - 2 = \sqrt{3}(x-4) \to y = \sqrt{3}x - 4\sqrt{3} + 2$

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الف) $d = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2} = \sqrt{(2-(-1))^2 + (3-(-1))^2} = \sqrt{9+16} = \sqrt{25} = 5$

ب) $3x + 4y - 3 = 0 \leadsto d = \frac{|ax_A + by_A + c|}{\sqrt{a^2 + b^2}}$

$\leadsto d = \frac{|3\times 2 + 4\times 3 - 3|}{\sqrt{9+16}} = \frac{15}{5} = 3$ (۳)

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الف) $(2m+3y=6) \xrightarrow{\times 2} \begin{cases} 4m + 6y = 12 \\ 4x + 6y = 8 \end{cases} \to 4x + 6y = \frac{8+12}{2} = 10 \to 2x + 3y = 5$

$b: 2x + 3y - 5 = 0$

$y = -\frac{2}{3}x + \frac{5}{3}$

ب) $d = \frac{|c - c'|}{\sqrt{a^2+b^2}} = \frac{|12-8|}{\sqrt{4^2+4^2}} = \frac{4}{\sqrt{32}} = \frac{2}{\sqrt{16}} \times \frac{\sqrt{13}}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$

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$d_1: 2x + 3y = 3 \to m_1 = -\frac{2}{3}$

$d_2: 3x - 2y = 1 \to m_2 = \frac{3}{2}$ (عمودند) $\to m_1 m_2 = -1$

$\to \tan\alpha = \left|\frac{m - m'}{1 + mm'}\right| \leadsto \begin{cases} 2x + 3y = 3 \\ 3x - 2y = 1 \end{cases} \to x = \frac{3+6}{4+9} = \frac{9}{13}$

$y = \frac{6-9}{-4-9} = \frac{3}{13}$

$\to \tan 45^\circ = \left|\frac{-\frac{2}{3} - m}{1 - \frac{2}{3}m}\right| = 1 \to \frac{-\frac{2}{3} - m}{1 - \frac{2}{3}m} = 1 \to m = -5$

$\frac{-\frac{2}{3} - m}{1 - \frac{2}{3}m} = -1 \to m = \frac{1}{5}$

$\leadsto l_1: y - \frac{3}{13} = -5\left(x - \frac{9}{13}\right) \to y = -5x + \frac{45}{13} + \frac{3}{13} \to y = -5x + 4$

$\leadsto l_2: y - \frac{3}{13} = \frac{1}{5}\left(x - \frac{9}{13}\right) \to y = \frac{1}{5}x - \frac{9}{65} + \frac{3}{13} \to y = \frac{1}{5}x + \frac{33}{65}$

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$\tan\alpha = \left|\frac{m - m'}{1 + mm'}\right| \to \tan\alpha = \left|\frac{2 - (-3)}{1 - 6}\right| = 1$

$d: y = 2x + 5 \to m = 2$

$d': y = -3x + 3 \to m = -3$

$\leadsto \alpha = 45^\circ$

$\beta = 135^\circ$

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الف) $d = \sqrt{(x_A - x_B)^2 + (y_A - y_B)^2} = \sqrt{3 - (-5)^2 + (-3 - (-2))^2} = \sqrt{8^2 + 6^2} = 10$

ب) $M \begin{cases} \frac{x_A + x_B}{2} = \frac{3-5}{2} = -1 \\ \frac{y_A + y_B}{2} = \frac{-3-2}{2} = -1 \end{cases} \longrightarrow M = (-1, -1)$

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الف) $G \begin{cases} \frac{-10-2+3}{3} = -3 \\ \frac{-12+3+1}{3} = -3 \end{cases} \longrightarrow G = (-3, -3)$

ب) $\begin{bmatrix} 10 & -2 & 3 \\ -13 & 3 & 1 \\ 1 & 1 & 1 \end{bmatrix} = |-30 - 2 - 39 - 9 - 24 + 10| \longrightarrow S = \frac{1}{2} \times 96 = 48$

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

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

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

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الف) $\begin{cases} x' = x - 2 \\ y' = y + 3 \end{cases}$ جایگذاری $\longrightarrow y' - 3 = \frac{2(x'+2)+1}{(x'+2)-2} \longrightarrow y' - 3 = \frac{2x'+5}{x'} \longrightarrow y' = \frac{2x'+5}{x'} + 3 = \frac{5x'+5}{x'}$

ب) $\begin{cases} x' = x - 3 \\ y' = y - 2 \end{cases}$ جایگذاری $\longrightarrow y' + 2 = \frac{2(x'+3)+1}{(x'+3)-3} = \frac{2x'+7}{x'} \longrightarrow y' = \frac{2x'+7}{x'} - 2 = \frac{7}{x'}$

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الف) $\begin{cases} 3x + 4y = 2 \\ x - 5y = 1 \end{cases} \xrightarrow{-3\times} \begin{cases} 3x + 4y = 2 \\ -3x + 15y = -3 \end{cases} \longrightarrow 19y = -1 \longrightarrow y = \frac{-1}{19}, \quad x = \frac{14}{19}$

ب) $\begin{cases} 3x + 4y = 2 \\ x - 5y = 1 \end{cases}$ ضرایب $\begin{bmatrix} 3 & 4 \\ 1 & -5 \end{bmatrix} = -15 - 4 = -19$

$\begin{bmatrix} 2 & 4 \\ 1 & -5 \end{bmatrix} = -10 - 4 = -14$ صورت

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