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

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الف) $m = \frac{dy}{dx} = \frac{-2-2}{5-4} = -4$ $\quad y - y_1 = m(x - x_1) \xrightarrow{(4,2)} y - 2 = -4(x-4) \to y = -4x + 18$

ب) $m = m' \sim m'_2 = -3$

$2y + 4x = -1 \to y = -2x - \frac{1}{2} \to m = -2$ $\quad y - y_1 = m'(x - x_1) \xrightarrow{(4,2)} y - 2 = -2(x-4) \to y = -2x + 14$

ج) $x + 2y = 1 \sim y = -\frac{1}{2}x + \frac{1}{2} \to m = -\frac{1}{2}$

$m' = \frac{-1}{m} \sim m' = 2 \xrightarrow{(4,2)} y - 2 = 2(x-4) \to y = 2x - 10$

د) $m = \tan\frac{\pi}{4} = \sqrt{2}$ $\quad \xrightarrow{(4,2)} y - 2 = \sqrt{2}(x-4)$

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

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الف) $\sqrt{5x^2 + 5y^2} = \sqrt{(-3)^2 + (2-1)^2} = \sqrt{9+16} = 5$

ب) $3x + 4y - 3 = 0$

$(2, 4)$

$d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{|4 + |2 - 3|}{\sqrt{9+16}} = \frac{15}{5} = 3$

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$2x + 3y = 5 \xrightarrow{\times 2} 4x + 6y = 12$

$4x + 6y = 8$

الف) $ax + by = \frac{c + c'}{2} \to 4x + 6y = \frac{12+8}{2} = 10 \to 2x + 3y = 5 \to y = -\frac{2}{3}x + \frac{5}{3}$

ب) $d = \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|12 - 8|}{\sqrt{16 + 36}} = \frac{4}{\sqrt{52}} = \frac{2}{\sqrt{13}} = \frac{2\sqrt{13}}{13}$

$\sqrt{52} = 2\sqrt{13}$

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

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

$-\frac{2}{3} = \frac{-1}{\frac{3}{2}} \to m' = -\frac{1}{m}$ عمودمنصف ← قطع

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

$\frac{|2x + 3y - 3|}{\sqrt{4+9}} = \frac{|3x - 2y - 1|}{\sqrt{9+4}}$

$\to 2x + 3y - 3 = 3x - 2y - 1 \to x - 5y + 2 = 0 \to -x + 5y = 2 \to y = \frac{1}{5}x + \frac{2}{5}$

$\to 2x + 3y - 3 = -3x + 2y + 1 \to 5x + y - 4 = 0 \to 5x + y = 4 \to y = -5x + 4$

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$y + 2x = 3 \quad \to m = -2$

$y - 2x = 5 \quad \to m' = 2$

$\tan\alpha = \left|\frac{m - m'}{1 + mm'}\right| = \left|\frac{2 - (-2)}{1 - 4}\right| = \left|\frac{4}{-3}\right| = 1 \to \alpha = 45^\circ$

$\alpha_2 = 180 - 45 = 135^\circ$

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$A\begin{vmatrix}3\\-2\end{vmatrix} \quad B\begin{vmatrix}-5\\4\end{vmatrix}$

الف) $d=\sqrt{\Delta x^2+\Delta y^2}=\sqrt{8^2+(-6)^2}=\sqrt{64+36}=\sqrt{100}=10$

ب) $\begin{vmatrix}3\\-2\end{vmatrix} \quad M \quad \begin{vmatrix}-5\\4\end{vmatrix}$

$M\left(\frac{x_1+x_2}{2},\frac{y_1+y_2}{2}\right) \Rightarrow M\left(\frac{3-5}{2},\frac{-2+4}{2}\right) \to M(-1,1)$

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$\begin{vmatrix}3\\1\end{vmatrix} \quad \begin{vmatrix}-2\\4\end{vmatrix} \quad \begin{vmatrix}-10\\-14\end{vmatrix}$

الف) $\frac{x_1+x_2+x_3}{3}=\frac{3-2-10}{3}=-3$ ، $\frac{y_1+y_2+y_3}{3}=\frac{1+4-14}{3}=3$ $\to$ مرکز ثقل $(-3,3)$

ب) $\begin{vmatrix}3&1&1\\-2&4&1\\-10&-14&1\end{vmatrix}=(3)(4)(1)+(1)(1)(-10)+(-2)(-14)(1)-(1)(4)(-10)-(-2)(1)(1)-(4)(-14)(1)$

$=96 \qquad S=\frac{1}{2}\times 96=48$

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

الف) قرینه نسبت به محور طول‌ها: $-y=\frac{2x+1}{4x-4} \to y=\frac{-2x-1}{4x-4}$

ب) قرینه نسبت به مبدأ: $y=\frac{-2x+1}{-4x-4}$

ج) قرینه نسبت به خط $y=x$ (معکوس): $x=\frac{2y+1}{4y-4} \to 4xy-4x=2y+1 \to y=\frac{1+4x}{4x-2}$

د) قرینه نسبت به خط $y=-x$: $-x=\frac{-2y+1}{-4y-4} \to +4xy+4x=-2y+1 \to y=\frac{1-4x}{2+4x}$

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

الف) $x'=x-\alpha$ ، $y'=y-\beta$ ، $\begin{vmatrix}2\\-3\end{vmatrix} \to \begin{vmatrix}\alpha\\\beta\end{vmatrix}$

$x'=x-2 \to x=x'+2$

$y'=y+3 \to y=y'-3$

$y'-3=\frac{2x'+4+1}{x'+2-3} \Rightarrow y'=\frac{2x'+5+3x'-3}{x'-1}=\frac{5x'+2}{x'-1}$

ب) $x'=x-3 \to x=x'+3$

$y'=y-2 \to y=y'+2$

$y'+2=\frac{2x'+6+1}{x'+3-3} \Rightarrow y'=\frac{2x'+7-2x'}{x'}=\frac{7}{x'}$

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

الف) $3x+4y=2$ ، $x-5y=1 \xrightarrow{\times(-3)} \begin{cases}3x+4y=2\\-3x+15y=-3\end{cases}$

$19y=-1 \to y=\frac{-1}{19}$

$\xrightarrow{y=\frac{-1}{19}} 3x-\frac{4}{19}=2 \to x=\frac{14}{19}$

ب) $x=\frac{\begin{vmatrix}2&4\\1&-5\end{vmatrix}}{\begin{vmatrix}3&4\\1&-5\end{vmatrix}}=\frac{-(4)-(-10)}{(-15)-(4)}=\frac{-14}{-19}=\frac{14}{19}$ ، $y=\frac{\begin{vmatrix}3&2\\1&1\end{vmatrix}}{\begin{vmatrix}3&4\\1&-5\end{vmatrix}}=\frac{3-2}{-15-4}=\frac{-1}{19}$