

نام و نام خانوادگی لیکن اینترنک پاسخنامه تشریحی تکلیف شماره (۱۵۱) کلاس ... (۱۳۹۷-۱۳۹۸)

الف) $m = \text{شیب خط} = \frac{2-(-2)}{4-8} = -\frac{1}{2} \rightarrow y = -\frac{1}{2}x + b \rightarrow 2 = -1 + b \Rightarrow b = 3$
 $\Rightarrow y = -\frac{1}{2}x + 3$

ب) شیب خط میلان است: $2y + 4x + c = 0 \rightarrow 2(2) + 4(1) + c = 0 \Rightarrow c = -10$
 $\rightarrow y = \frac{-4x + 10}{2} \Rightarrow y = -2x + 5$

ج) $x + 3y = 1 \rightarrow -\frac{1}{3} = m$ شیب خط $= -\frac{1}{m} = 3 \rightarrow y = 3x + b \rightarrow 2 = 12 + b \rightarrow b = -10$
 $\rightarrow y = 3x - 10$

د) شیب خط $= \tan \frac{\pi}{4} = \tan 45^\circ = 1 \rightarrow y = x + b \rightarrow 2 = 5 + b \rightarrow b = -3 \rightarrow y = x - 3$

الف) $\sqrt{(7-3)^2 + (-1-2)^2} = \sqrt{(4)^2 + (-3)^2} = \sqrt{16+9} = \sqrt{25} = 5$

ب) $\frac{|1^2(2) + 4(1^2) - 10|}{\sqrt{1^2 + 4^2}} = \frac{15}{5} = 3$

چون خط موازی شیب آنها با هم برابر است و عرض از مبدأ آن بین عرض از مبدأ خط است.

الف) $\begin{cases} 4x + 7y - 10 = 0 \\ 4x + 7y - 12 = 0 \end{cases} \rightarrow d: 4x + 7y + \left(\frac{-12-10}{2}\right) = 0 \rightarrow 4x + 7y - 11 = 0$
 $y = \frac{-4x + 11}{7}$

ب) $\frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|-11 - (-12)|}{\sqrt{4^2 + 7^2}} = \frac{1}{\sqrt{65}} = \frac{\sqrt{65}}{65}$

$\frac{|1^2x - 2y - 1|}{\sqrt{1^2 + 2^2}} = \frac{|2x + 3y - 4|}{\sqrt{2^2 + 3^2}} \Rightarrow \begin{cases} 1^2x - 2y - 1 = 2x + 3y - 4 \Rightarrow x - 5y + 3 = 0 \\ 1^2x - 2y - 1 = -2x - 3y + 4 \Rightarrow 3x + y - 5 = 0 \end{cases}$

$\tan \alpha = \left| \frac{-3-2}{1+(-3)(2)} \right| = \left| \frac{-5}{-5} \right| = 1 \Rightarrow \alpha = 45^\circ$

$$\text{الف) } \sqrt{\frac{(5-(-2))^2}{4} + \frac{(-5-3)^2}{-4}} = \sqrt{1^2 + 4} = \sqrt{100} = 10$$

$$\text{ب) } M \begin{vmatrix} \frac{x_A + x_B}{2} = \frac{3-5}{2} = -1 \\ \frac{y_A + y_B}{2} = \frac{5-2}{2} = 1 \end{vmatrix} \rightarrow M \begin{vmatrix} -1 \\ 1 \end{vmatrix}$$

$$\text{الف) } M \begin{vmatrix} \frac{x_1 + x_2 + x_3}{3} = \frac{-10 - 2 + 1}{3} = \frac{-9}{3} = -3 \\ \frac{y_1 + y_2 + y_3}{3} = \frac{-13 + 3 + 1}{3} = \frac{-9}{3} = -3 \end{vmatrix} \rightarrow M \begin{vmatrix} -3 \\ -3 \end{vmatrix}$$

$$\text{ب) } \begin{vmatrix} 10 & -13 & 1 \\ -2 & 3 & 1 \\ 5 & 1 & 1 \end{vmatrix} = -10 - 19 - 2 - (9 + 24 - 10) = -61 - 15 = -76$$

$$\rightarrow S = \frac{1}{7} \times 76 = 10.857$$

$$\text{الف) } \text{قوسية شوارز} : -y = \frac{r_x + 1}{5x - 3} \Rightarrow y = \frac{-r_x - 1}{5x - 3}$$

$$\text{ب) } \text{قوسية شوارز} : y = \frac{-r_x + 1}{-5x - 3} = \frac{r_x - 1}{5x + 3}$$

$$\text{ج) } \text{قوسية شوارز} : x = \frac{r_y + 1}{5y - 3} \rightarrow 5xy - 3x = r_y + 1 \rightarrow 5xy - r_y = 1 + 3x \rightarrow y(5x - r) = 1 + 3x$$

$$\rightarrow y = \frac{1 + 3x}{5x - r}$$

$$\text{د) } \text{قوسية شوارز} : -x = \frac{-r_y + 1}{-5y - 3} \rightarrow 5xy + 3x = -r_y + 1 \rightarrow 5xy + y = 1 - r_x \rightarrow y(5x + 1) = 1 - r_x$$

$$\rightarrow y = \frac{1 - r_x}{5x + 1}$$

$$\text{الف) } x' = x - 2 \rightarrow x = x' + 2 \rightarrow (y' - 3) = \frac{r(x' + 2) + 1}{(x' + 2) - 3} = \frac{r x' + 2r + 1}{x' - 1} \rightarrow y' = \frac{r x' + 2r + 1}{x' - 1} + 3$$

$$\rightarrow y' = \frac{r x' + 2r + 1 + 3x' - 3}{x' - 1} = \frac{5x' + 2r - 2}{x' - 1}$$

$$\text{ب) } x' = x - 2 \rightarrow x = x' + 2 \rightarrow y' + 2 = \frac{r(x' + 2) + 1}{(x' + 2) - 3} = \frac{r x' + 2r + 1}{x' - 1} \rightarrow y x' + 1 x' = r x' + 1$$

$$\rightarrow y' = \frac{r}{x'}$$

$$\text{الف) } \begin{cases} 3x + 4y = 2 \\ r_x(x - 5y = 1) \end{cases} \rightarrow 5y - (-15y) = 2 - 1 \Rightarrow 19y = -1 \rightarrow y = -\frac{1}{19}, x = 2 - 4(-\frac{1}{19})$$

$$= 2 + \frac{4}{19} = \frac{38}{19} + \frac{4}{19} = \frac{42}{19}$$

$$\rightarrow x = \frac{42}{19}$$

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