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

۱ (۲)

الف) شیب $= \frac{\Delta y}{\Delta x} = \frac{2-(-2)}{5-3} = -4$

$y = -4x + b \Rightarrow 2 = -12 + b \Rightarrow b = 18$

$y = -4x + 18$

ب) $2y + 2x = -1 \Rightarrow y = -2x - \frac{1}{2}$ شیب $= -2$

$y = -2x + b \Rightarrow 4 = -12 + b \Rightarrow b = 16$

$y = -2x + 16$

ج) $x + 3y = 1 \Rightarrow y = -\frac{1}{3}x + \frac{1}{3}$ شیب $= 3$ (عکس وزیر)

$y = 3x + b \Rightarrow 2 = 12 + b \Rightarrow b = -10$

$y = 3x - 10$

د) شیب $= \sqrt{3}$ $\frac{\pi}{3} = 60^\circ$ $\tan 60^\circ = \sqrt{3}$

$y = \sqrt{3}x + b \Rightarrow 2 = 6\sqrt{3} + b$

$b = 2 - 6\sqrt{3}$

$y = \sqrt{3}x + 2 - 6\sqrt{3}$

۲ (۴)

الف) $|AB| = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2} = \sqrt{(-1-2)^2 + (7-4)^2} = \sqrt{9+9} = \sqrt{18} = 5$

ب) $3x + 4y = 2 \Rightarrow 3x + 4y - 2 = 0$

$d = \frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}}$

$= \frac{|3(1) + 4(2) - 2|}{\sqrt{9+16}} = \frac{|11|}{\sqrt{25}} = \frac{11}{5}$

۳ (۵)

الف) $2(2x + 3y = 6) = 4x + 6y = 12$ $4x + 2y = 8$

$ax + by = \frac{c + c'}{2} \Rightarrow 4x + 2y = \frac{12+8}{2} = 10 \Rightarrow 4x + 2y = 10$

$\Rightarrow 2y = 10 - 4x \Rightarrow y = \frac{10}{2} - \frac{4}{2}x \Rightarrow y = 5 - 2x \Rightarrow y = -2x + 5$

ب) $d = \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|12 - 8|}{\sqrt{(4)^2 + (2)^2}} = \frac{4}{\sqrt{16+4}} = \frac{4}{\sqrt{20}} = \frac{4}{2\sqrt{5}} = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5}$

۴ (۵)

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

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

$|3x - 2y - 1| = |2x + 3y - 3|$

$3x - 2y - 1 = 2x + 3y - 3 \Rightarrow x - 5y = -2$

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

۵ (۵)

$\tan\alpha = \left|\frac{m - m'}{1 + mm'}\right|$ $y - 2x = 0$ $y + 2x = 2$

$y = 2x + 5 \Rightarrow m = 2$

$y = -2x + 2 \Rightarrow m' = -2$

$\tan\alpha = \left|\frac{2 - (-2)}{1 + (-4)}\right| = 1$

$\tan\alpha = 1 \Rightarrow \alpha = \frac{\pi}{4} = 45^\circ$

عارفه فضل الهی

۶ الف) $|AB| = \sqrt{(y_2-y_1)^2+(x_2-x_1)^2} = \sqrt{(-5-3)^2+(-4-2)^2} = \sqrt{64+36} = \sqrt{100} = 10$

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

۷ الف) مرکز ثقل $x_G = \frac{-10-2+3}{3} = -3$

$y_G = \frac{-12+3+1}{3} = -2$ $\quad \begin{bmatrix}-3\\-2\end{bmatrix}$

ب) $S = \frac{1}{2}\left|\begin{matrix}-10 & -4 & 1\\ -2 & 3 & 1\\ 3 & 1 & 1\end{matrix}\right| = \frac{-30-3-2-(9+2-10)}{2} = \frac{-96}{2} = -48 \rightarrow 48$

۸ الف) $-y = \frac{2x+1}{4x-2} \quad y \to -y$

ب) $y = \frac{-2x+1}{-4x-2} \quad x \to -x$

ج) $\begin{cases} x \to y \\ y \to x \end{cases} \Rightarrow x = \frac{2y+1}{4y-2} \Rightarrow 4xy-2x = 2y+1 \Rightarrow$

$\Rightarrow 4xy-2y = 1+2x \Rightarrow 2y(2x-1) = 1+2x \Rightarrow$

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

د) $\begin{cases} x \to -y \\ y \to -x \end{cases} \Rightarrow -x = \frac{-2y+1}{-4y-2} \Rightarrow 4xy+2x = -2y+1$

$\Rightarrow 4xy+2y = 1-2x \Rightarrow 2y(2x+1) = 1-2x \Rightarrow 2y = \frac{1-2x}{2x+1}$

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

۹ (پاسخ سوال ۹ در صفحه بعد)

۱۰ الف) $\begin{cases} 3x+4y=2 \\ x-5y=1 \end{cases} \Rightarrow \begin{cases} 3x+4y=2 \\ -3x+15y=-3 \end{cases} \quad (-3)$

$19y = -1 \Rightarrow y = \frac{-1}{19}$ جای‌گذاری

$\Rightarrow 3x-\frac{4}{19} = 2 \Rightarrow 3x = \frac{42}{19} \Rightarrow x = \frac{14}{19}$

ب) $\begin{cases} 3x+4y=2 \\ x-5y=1 \end{cases} \quad x = -\frac{4-(-10)}{-4-15} = \frac{14}{-19} \quad y = \frac{-3}{-4-15} = \frac{-1}{-19} = \frac{1}{19}$

$= \frac{14}{19}$

عابد فضل الهی

۹ـ

الف)

$$\begin{cases} x' = x - 2 \\ y' = y - (-1) = y + 1 \end{cases} \Rightarrow \begin{cases} x = x' + 2 \\ y = y' - 1 \end{cases}$$

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

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

ب)

$$\begin{cases} x' = x - 3 \\ y' = y - 1 \end{cases} \Rightarrow \begin{cases} y = y' + 1 \\ x = x' + 3 \end{cases}$$

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

$$y' = \frac{3x' + 7 - x'}{x'} = \boxed{\frac{7}{x'}}$$