باران شریفی سری پانزدهم کلاس A

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سوال ۱:

الف) $\big|^{4}_{2}$ $\big|^{5}_{-2}$ $m = \frac{2-(-2)}{4-5} = -4$

$y - y_1 = m(x - x_1) \rightarrow y - 2 = -4(x-4) \rightarrow \underline{y = -4x + 18}$

ب) $2y + 6x = -1$ موازی $\rightarrow y = \frac{-6x-1}{2} \rightarrow y = -3x - \frac{1}{2}$

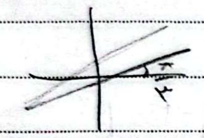
شیب برابر $m = -3$

$(y - 2 = -3(x-4) \rightarrow \underline{y = -3x + 14}$

ج) $x + 3y = 1 \rightarrow y = -\frac{1}{3}x + \frac{1}{3} \rightarrow m = +3$

$y - 2 = 3(x-4) \rightarrow y = 3x - 10$

د) $\frac{\pi}{3}$



$\frac{\pi}{3} = 60 \quad m = \sqrt{3}$

$y - 2 = \sqrt{3}(x-4)$

$\underline{y = \sqrt{3}x - 4\sqrt{3} + 2}$

سوال ۲:

الف) $\sqrt{\Delta x^2 + \Delta y^2} \rightarrow \sqrt{(2+1)^2 + (3-7)^2} = \sqrt{9+16} = \underline{5}$

$\big|^{2}_{3}$ $\big|^{-1}_{7}$ ۲۵

ب) $3x + 4y = 3 \rightarrow 3x + 4y - 3 = 0 \quad d = \frac{|ax + by + c|}{\sqrt{a^2+b^2}} \rightarrow d = \frac{|3\times 2 + 4 \times 3 - 3|}{\sqrt{9+16}} = \frac{15}{5} = 3$

سوال ۳:

$4x + 6y = 8$ و $2x + 3y = 6$

الف) $4x + 6y = 8 \rightarrow 2x + 3y = 4 \qquad \frac{c + c'}{2} = \frac{6+4}{2} = 5$

معادله خط: $\underline{2x + 3y = 5}$

ب) $\frac{|c - c'|}{\sqrt{a^2+b^2}} \rightarrow \frac{|8-6|}{\sqrt{4+9}} = \frac{2}{\sqrt{13}}$

سوال ۴:

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

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

Arman $5y - x = 2$

$\underline{5x + y = 4} \quad \frac{|3x - 2y - 1|}{\sqrt{9+4}} = \frac{|2x + 3y - 3|}{\sqrt{4+9}}$

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

سوال ۵:

$y + 3x = 3 \quad y - 2x = 5 \quad y = -3x + 3 \quad y = 2x + 5$

$\tan\alpha = \left|\frac{m - m'}{1 + mm'}\right| \quad \alpha / \beta$

$\left|\frac{-3 - 2}{1 + (-6)}\right| = \left|\frac{-5}{-5}\right| = 1 = \tan\alpha$

$\Rightarrow \alpha = 45^\circ$

$\beta = 180 - 45 = 135$

سوال ۶:

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

الف) $\sqrt{\Delta x^2 + \Delta y^2} \rightsquigarrow \sqrt{(3-(-5))^2 + (-2-4)^2} = \sqrt{\underbrace{64 + 36}_{100}} = 10$

ب) $\frac{3-5}{2} = -1 = x \quad \frac{-2+4}{2} = 1 = y \rightsquigarrow (-1, 1)$

سوال ۷:

الف) $x_G = \frac{-10 - 2 + 3}{3} = \frac{-9}{3} = -3 \qquad \begin{vmatrix} -10 \\ -13 \end{vmatrix} \quad \begin{vmatrix} -2 \\ 3 \end{vmatrix} \quad \begin{vmatrix} 3 \\ 1 \end{vmatrix}$

$y_G = \frac{-13 + 3 + 1}{3} = \frac{-9}{3} = -3 \quad G(-3, -3)$

ب) $S = \frac{1}{2}\begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix} \rightsquigarrow S = \frac{1}{2}\begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -10 & -13 & 1 \end{vmatrix} = \frac{1}{2}(9 + 26 - 10) = \frac{25}{2} = 12.5$

$S = \frac{1}{2}(9 + 24 - 10 - (-30) - (-39)(-2)) = \frac{96}{2} = 48$

سوال ۱:

$y = \frac{2x + 1}{4x + 3}$

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

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

ج) $\begin{matrix} x \to y \\ y \to x \end{matrix} \quad x = \frac{2y + 1}{4y - 3} \rightsquigarrow x(4y - 3) = 2y + 1 \rightsquigarrow 4xy - 3x = 2y + 1$

$4xy - 2y = 1 + 3x$

$y(2x - 1) = 3x + 1 \rightsquigarrow y = \frac{3x + 1}{2x - 1} \rightarrow y = \frac{3x + 1}{4x - 2} = z$

د) $x \to -y$

$-x \to y \quad y = \frac{-2x + 1}{-4x - 3} \rightsquigarrow 4xy + 3y = -2x + 1 \quad 2x(2y + 1) = 1 - 3y$

$4xy + 2x = 1 - 3y \quad x = \frac{1 - 3y}{4y + 2}$

Arman

به نام خدا کلاس A

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سوال ۹: $y = \frac{2x+1}{x-3}$

الف) $\begin{vmatrix} 2 \\ -3 \end{vmatrix}$ جواب اضافه

$x' = x - 2 \rightsquigarrow x = x' + 2$
$y' = y - (-3)$ $\quad y = y' - 3$

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

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

ب) $\begin{vmatrix} 3 \\ 2 \end{vmatrix}$ $\quad x' = x - 3 \rightsquigarrow x = x' + 3$
$y' = y - 2$ $\quad y = y' + 2$

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

$y' = \frac{2x'+7}{x'} - 2 \rightsquigarrow \frac{2x'-2x'+7}{x'}$

$\therefore y' = \frac{7}{x'}$

سوال ۱۰:

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

الف)

$3x + 4y = 2$
$x - 5y = 1 \xrightarrow{\times -3} -3x + 15y = -3$

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

$x - 5y = 1 \rightsquigarrow x = 1 + 5y$

$x = 1 + \frac{5}{19} = \frac{24}{19}$

ب) $x = -\frac{\begin{vmatrix} 2 & 4 \\ -5 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} \rightsquigarrow x = -\frac{2 + 20}{-15 - 4} = -\frac{22}{-19} = \frac{24}{19}$

$y = \frac{\begin{vmatrix} 3 & 2 \\ 1 & 1 \end{vmatrix}}{\begin{vmatrix} 3 & 4 \\ 1 & -5 \end{vmatrix}} = \frac{3 - 2}{-15 - 4} = \frac{1}{-19}$