

الف) $\left| \begin{matrix} 2 & 1 \\ 1 & 2 \end{matrix} \right| = 0 \Rightarrow m = \frac{2-(1-1)}{1-1} = -4$

سوال ۱۸

$2 - 2 = m(n-1) \Rightarrow 2-2 = -4(n-1) \Rightarrow 2 = -4n + 4 \Rightarrow 2n = 2 \Rightarrow n = 1$

ب) $2y + 4n = 1 \Rightarrow y = \frac{1-4n}{2} \Rightarrow y = -2n + \frac{1}{2}$

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$(2-2) = -3(n-1) \Rightarrow 2 = -3n + 3 \Rightarrow 3n = 1 \Rightarrow n = \frac{1}{3}$

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ج) $n + 3y = 1 \Rightarrow y = \frac{1-n}{3} \Rightarrow y = -\frac{1}{3}n + \frac{1}{3} \Rightarrow m = -3$

$2-2 = 3(n-1) \Rightarrow 2 = 3n - 3 \Rightarrow 3n = 5 \Rightarrow n = \frac{5}{3}$

د) $\frac{\pi}{3} \Rightarrow \frac{\pi}{3} = 4 \Rightarrow m = \sqrt{3} \Rightarrow 2-2 = \sqrt{3}(n-1) \Rightarrow 2 = \sqrt{3}n - \sqrt{3} + 1 \Rightarrow \sqrt{3}n = 2 + \sqrt{3} - 1 \Rightarrow \sqrt{3}n = 1 + \sqrt{3} \Rightarrow n = \frac{1+\sqrt{3}}{\sqrt{3}}$

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الف) $\sqrt{4n^2 + 4y^2} = \sqrt{(2+1)^2 + (3+1)^2} = \sqrt{9+16} = 5$

سوال ۲۰

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ب) $3n + 4y = 3 \Rightarrow 3n + 4y = 3 \Rightarrow \frac{|an+by+c|}{\sqrt{a^2+b^2}} = \frac{|3n+4y-3|}{\sqrt{9+16}} = \frac{|3-3|}{5} = 0$

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$5n + 4y = 1, 2n + 3y = 4$

سوال ۳۰

الف) $5n + 4y = 1 \Rightarrow 2n + 3y = 4 \Rightarrow \frac{5+4}{2} = \frac{4+4}{2} = 4$

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$2n + 3y = 4$

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ب) $\frac{|c-c'|}{\sqrt{a^2+b^2}} = \frac{|4-4|}{\sqrt{4+9}} = 0$

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سوال ۴۰: $\frac{|c_1n+b_1y-c_1|}{\sqrt{a_1^2+b_1^2}} = \frac{|c_2n+b_2y-c_2|}{\sqrt{a_2^2+b_2^2}}$

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$3n - 2y = 1, 2n + 3y = 3$

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

$$x + 3n = 3 \quad x - 2n = \omega$$

$$x = -3n + 3$$

$$x = 2n + \omega$$

سوال ٥

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

$$\frac{\alpha}{\beta}$$

$$\left| \frac{-3 - 2}{1 + (-4)} \right| = \left| \frac{-5}{-3} \right| = 1 = \tan \alpha$$

$$\alpha = 45^\circ$$

$$\beta = 110 - 45 = 65$$

$$A \begin{vmatrix} 1 \\ -2 \end{vmatrix} B \begin{vmatrix} -\omega \\ 3 \end{vmatrix}$$

سوال ٦

$$\sqrt{(3 - (-\omega))^2 + (-2 - 3)^2} = \sqrt{49 + 25} = 10$$

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$$\frac{3 - \omega}{2} = -1 = n \quad \frac{-2 + 3}{2} = 1 = y \quad (-1, 1)$$

$$n_G = \frac{-10 - 2 + 3}{3} = \frac{-9}{3} = -3$$

$$\begin{vmatrix} -10 & -2 & 3 \\ -13 & 3 & 1 \end{vmatrix}$$

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

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$$S = \frac{1}{2} \begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ x_3 & y_3 & 1 \end{vmatrix} \sim S = \frac{1}{2} \begin{vmatrix} 3 & 1 & 1 \\ -2 & 3 & 1 \\ -10 & -13 & 1 \end{vmatrix} = \frac{1}{2} (9 + 17 - 10) = 11$$

$$S = \frac{1}{2} (9 + 17 - 10 - (-30) - (-39)(-2)) = \frac{94}{2} = 47$$

$$x = \frac{2n+1}{5n+3}$$

سوال ٨

$$x \rightarrow -x \sim x = \frac{2n+1}{5n-3} \quad y = \frac{-2n-1}{5n-3}$$

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$$x \rightarrow -x \sim x = \frac{-2n+1}{-5n-3}$$

$$2) \begin{matrix} n \rightarrow x \\ x \rightarrow n \end{matrix} \quad n = \frac{2x+1}{5x-3} \sim n(5x-3) = 2x+1 \sim 5xn - 3n = 2x+1$$

$$x = \frac{2n+1}{5n-3} \leftarrow \frac{2n+1}{2n-1} = 2x \leftarrow 2x(2n-1) = 2n+1$$

$$3) x \rightarrow -x \quad x \rightarrow -n \quad -n = \frac{-2x+1}{-5x-3} \sim (-5x-3)(-n) = -2x+1 \quad 5xn + 3n = -2x+1 \quad 5xn + 2x = 1-3n \quad |x = \frac{1-3n}{5n+2}$$

Arman

سوال ۹: $\frac{2n+1}{n-3}$

$$n' = n - 2 \sim n = n' + 2$$

$$x' = x - (-3) \quad x = x' - 3$$

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

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

ج) $\frac{3}{2} \quad n' = n - 3 \sim n = n' + 3$

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

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

$$x' = \frac{2n'+7}{n'} - 2 \sim \frac{2n'-2n'+7}{n'}$$

$$x' = \frac{7}{n'}$$

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

الف) $2n+5x+2 \rightarrow 2n+5x=3$

$$n-3x=1 \quad \times -3 \rightarrow -2n+15x=-3$$

سوال ۱۰:

ج) $n = - \frac{\begin{vmatrix} 1 & 2 \\ -3 & 1 \end{vmatrix}}{\begin{vmatrix} 2 & 5 \\ 1 & -3 \end{vmatrix}}$

$$1-19+5x+10 \sim x = -\frac{1}{19}$$

$$n = \frac{1}{19}$$

$$n = - \frac{+15 - (-10)}{-15-3} = -\frac{25}{-18} = \frac{25}{18}$$

$$x = \frac{\begin{vmatrix} 2 & 1 \\ 5 & -3 \end{vmatrix}}{\begin{vmatrix} 2 & 5 \\ 1 & -3 \end{vmatrix}} = \frac{2-5}{-15-3} = \frac{-3}{-18} = \frac{1}{6}$$