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خط لنگر از نقطه $\left| \frac{1}{2} \right|$

الف) $\left| \frac{5}{-2} \right|$

$$y - 2z = -4(n - 4) \leftarrow \frac{-2-2}{5-4} z = -4$$

$$y = -4n + 18$$

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

ج) $y = 2x - 10$

د) $y = \sqrt{3}x - (\sqrt{3} + 2) \leftarrow \sqrt{3}x + 4 - 4\sqrt{3} + 2 \leftarrow a = \tan \frac{\pi}{3} = \sqrt{3}$

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نقطه $\left| \frac{2}{3} \right|$

الف) $\left| -\frac{1}{\sqrt{2}} \right|$

ب) $\left(\frac{a^2 + b^2 + c^2}{\sqrt{a^2 + b^2}} \right)$

ج) $\frac{1}{\sqrt{a^2 + b^2}} \left(\frac{a^2 + b^2 + c^2}{\sqrt{a^2 + b^2}} \right)$

د) $\frac{1}{\sqrt{a^2 + b^2}} \left(\frac{a^2 + b^2 + c^2}{\sqrt{a^2 + b^2}} \right)$

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الف) $\begin{cases} 4x + 7y = 1 \\ 4x + 7y = 12 \end{cases} \rightarrow an + by = \frac{c + c'}{2} \rightarrow 4x + 7y = 10$

ب) $d = \frac{|1 - 12|}{\sqrt{4^2 + 7^2}} = \frac{11}{\sqrt{65}}$

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

ب) $\frac{|2x + 3y - 3|}{\sqrt{13}} = \frac{|4x - 2y - 1|}{\sqrt{13}} \rightarrow |2x + 3y - 3| = |4x - 2y - 1|$

ج) $2x + 3y - 3 = 4x - 2y - 1 \rightarrow x - 5y = -2$

د) $2x + 3y - 3 = -(4x - 2y - 1) \rightarrow -2x - y = -4 \rightarrow 2x + y = 4$

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الف) $\tan \alpha = \left| \frac{m - m'}{1 + mm'} \right| \rightarrow \left| \frac{5}{-5} \right| = 1 \rightarrow \tan \alpha = 1$

ب) $y = 2x + 0 \rightarrow m = 2$

ج) $y = -3x + 3 \rightarrow m' = -3$

د) $1 - 2 = -1$

$$\sqrt{(\Delta y)^2 + (\Delta x)^2} = \sqrt{(1)^2 + (4)^2} = \sqrt{100} = 10$$

(الف)

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$$x = \frac{x_1 + x_2}{2} \rightarrow \frac{-5 + 3}{2} = -1$$

$$(-1, 1)$$

(ب)

$$y = \frac{y_1 + y_2}{2} \rightarrow \frac{2 - 2}{2} = 1$$

$$x_G = \frac{x_1 + x_2 + x_3}{3} \rightarrow \frac{-10 - 2 + 3}{3} = -3$$

$$(-3, -3)$$

(الف)

$$y_G = \frac{y_1 + y_2 + y_3}{3} \rightarrow \frac{-13 + 3 + 1}{3} = -3$$

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$$S = \frac{1}{3} |x_A(y_B - y_C) + x_B(y_C - y_A) + x_C(y_A - y_B)|$$

$$\frac{1}{3} |3(14) - 2(-12) - 10(-2)| = \boxed{24}$$

(ب)

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

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

(الف)

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

(ب)

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

(ج)

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

(د)

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

$$x' = x - \alpha$$

$$y' = y - \beta$$

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

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

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

(الف)

$$y' = \frac{2n'+2}{n'-1}$$

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

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$$y' = \frac{v}{n'} \leftarrow (y'+2) = \frac{2(n'+2)+1}{(n'+2)-3} \leftarrow \begin{matrix} n' = n-3 \rightarrow n = n'+3 \\ y' = y-2 \rightarrow y = y'+2 \end{matrix}$$

(ب)

$$n = \frac{12}{19}$$

$$n = \frac{\frac{12}{19} + 10}{19} \quad y = \frac{3-2}{-19} \quad (ب)$$

$$\begin{cases} 3x + 2y = 2 \\ x - 0y = 1 \end{cases}$$

$$\begin{cases} 3x + 2y = 2 \\ -3x + 10y = -3 \end{cases}$$

(الف)

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$$14y = -1 \rightarrow y = -\frac{1}{14}$$

$$3x = \frac{22}{19} \rightarrow x = \frac{22}{57}$$

$$n = \frac{12}{19}$$

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