

کتاب شماره ۱

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الف) $\begin{vmatrix} 4 & 2 \\ 2 & -2 \end{vmatrix} \quad m = \frac{2 - (-2)}{4 - 2} = -4 \quad y - y_0 = m(x - x_0) \rightarrow$

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

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

ج) $m = -\frac{1}{\sqrt{3}} \xrightarrow{\text{عکس و قرینه}} m = \sqrt{3} \quad y - 2 = \sqrt{3}(x - 4) \rightarrow \underline{y = \sqrt{3}x - 4\sqrt{3} + 2}$

د) $\tan \frac{\pi}{6} = \sqrt{3} = m \quad y - 2 = \sqrt{3}(x - 4) \rightarrow \underline{y = \sqrt{3}x - 4\sqrt{3} + 2}$

۲- الف) $\begin{vmatrix} 4 & 2 \\ 2 & -2 \end{vmatrix} \quad AB = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} = \sqrt{\underbrace{(2 - (-1))^2}_9 + \underbrace{(3 - 1)^2}_{16}} =$

ب) $\begin{vmatrix} -1 & 1 \\ 1 & 1 \end{vmatrix} \quad \sqrt{20} = 2\sqrt{5}$

ب) $\frac{|ax_0 + by_0 + c|}{\sqrt{a^2 + b^2}} = \frac{\underbrace{(4 \times 2)}_8 + \underbrace{(12 \times 3)}_{36} - 36}{\sqrt{20}} = \frac{16}{2\sqrt{5}} = \frac{8}{\sqrt{5}}$

$$r_m + r_y = 4$$

$$r_m + r_y = 4$$

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$$\frac{C+C'}{r} \rightarrow r_m + r_y = \frac{4+4}{r} = \frac{8}{r} \rightarrow r_m + r_y = 2$$

(الف)

$$\frac{|C-C'|}{\sqrt{a^2+b^2}} = \frac{|4-4|}{\sqrt{4+4}} = \frac{0}{\sqrt{8}} = \frac{0}{2\sqrt{2}} = 0$$

ب.

$$r_m - r_y = 1 \rightarrow r_m - r_y - 1 = 0$$

$$r_m + r_y = 3 \rightarrow r_m + r_y - 3 = 0$$

$$\frac{|r_m - r_y - 1|}{\sqrt{4+4}} = \frac{|r_m + r_y - 3|}{\sqrt{4+4}} \rightarrow$$

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$$|r_m - r_y - 1| = |r_m + r_y - 3| \rightarrow r_m - r_y - 1 = r_m + r_y - 3 \rightarrow r_m + r_y = 2 \rightarrow 2 - r_m - r_y = 0$$

$$\rightarrow r_m - r_y - 1 = -r_m - r_y + 3 \rightarrow y - 4 = -x \rightarrow x + y - 4 = 0$$

$$\tan \alpha = \frac{|\tilde{m} - \tilde{m}'|}{|1 + m m'|} = \frac{2}{|1-4|} = \frac{2}{3} = 1$$

$$\alpha \rightarrow 45^\circ \text{ ق ق } \rightarrow 45^\circ \text{ ر ر } \rightarrow 45^\circ \text{ ر ر } \rightarrow 45^\circ \text{ ق ق }$$

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$$AB = \sqrt{\underbrace{(r - (-5))}_4^2 + \underbrace{(-r - 4)}_{-4}^2} = \sqrt{100} = 10$$

٦- الف)

$$M \left| \begin{array}{l} \frac{r-5}{r} = -1 \\ \frac{-r+4}{r} = 1 \end{array} \right. \rightarrow M \left| \begin{array}{l} -1 \\ 1 \end{array} \right.$$

ب)

$$hG = \frac{-10 - r + 4}{r} = -r$$

$$yG = \frac{-14 + 4 + 1}{r} = -r$$

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الف)

$$G \left| \begin{array}{l} -r \\ -r \end{array} \right.$$

$$\begin{bmatrix} -10 & -13 & 1 \\ -2 & 3 & 1 \\ 3 & 1 & 1 \end{bmatrix} = \frac{1}{2} |-10 \cdot 2 - 39 \cdot 9 - 26 + 10| = 48$$

(ب)

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

(الف) نسبت به محور n ← n قرینه می شود

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

(ب) نسبت به محور n ← n قرینه می شود

(ج) جابجایی طول و عرض عرض می شود

$$4yn - 3n = 2y + 1 \rightarrow (4n-2)y = 3n+1 \Rightarrow y = \frac{3n+1}{4n-2}$$

(د) طول و عرض جابجایی می شود و آنها را قرینه می کنیم

$$-n = \frac{-2y+1}{-4y-3} \rightarrow n = \frac{-2y+1}{4y+3} \Rightarrow 4ny+3n = -2y+1 \rightarrow (4n+2)y = -3n+1$$

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

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$$\left. \begin{array}{l} y' = y+2 \quad n' = n-2 \\ \hookrightarrow y = y'-2 \quad \hookrightarrow n = n'+2 \end{array} \right\} \xrightarrow{\text{جابجایی}} y'-2 = \frac{2(n'+2)+1}{(n'+2)-2} = \frac{2n'+5}{n'-1}$$

(الف)

$$\left. \begin{array}{l} y' = y-2 \quad n' = n-3 \\ \hookrightarrow y = y'+2 \quad \hookrightarrow n = n'+3 \end{array} \right\} \xrightarrow{\text{جابجایی}} y'+2 = \frac{2(n'+3)+1}{(n'+3)-2} = \frac{2n'+7}{n'+1} = 2$$

(ب)

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

$$\begin{cases} 2n + 4y = 2 \\ (n - 5y = 1) \times (-2) \end{cases} \rightarrow \begin{cases} 2n + 4y = 2 \\ -2n + 10y = -2 \end{cases}$$

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

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(الف)

$$\begin{cases} 2n + 4y = 2 \\ n - 5y = 1 \end{cases} \quad n = -\frac{14}{-14}, y = -\frac{1}{14}$$

(ب)

$$\left. \begin{aligned} \text{مخرج} &= \begin{vmatrix} 2 & 4 \\ 1 & -5 \end{vmatrix} = -10 - 4 = -14 \\ \text{صورت } n &= \begin{vmatrix} 4 & 2 \\ -5 & 1 \end{vmatrix} = 4 - (-10) = 14 \\ \text{صورت } y &= \begin{vmatrix} 2 & 2 \\ 1 & 1 \end{vmatrix} = 2 - 2 = 0 \end{aligned} \right\} n = \frac{14}{-14}, y = -\frac{1}{14}$$