

$$A \begin{vmatrix} 1 & 2 \\ -2 & 1 \end{vmatrix} \quad B \begin{vmatrix} 1 & 2 \\ 1 & 1 \end{vmatrix}$$

$$a = \frac{1+2}{1-2} = \frac{1+2}{-1} = -3 \rightarrow a' = \frac{1}{-3}$$

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

$$M \begin{vmatrix} \frac{5+2}{3} = 3 \\ \frac{1-2}{3} = -\frac{1}{3} \end{vmatrix}$$

$$A \begin{vmatrix} 1 & 1 \\ 1 & 1 \end{vmatrix}$$

$$BC = \sqrt{(-2+1)^2 + (3-2)^2} = \sqrt{2} \quad BC - AH = \sqrt{2} - 2 = 3$$

$$B \begin{vmatrix} 1 & 1 \\ 1 & 1 \end{vmatrix}$$

$$a = \frac{3-2}{-2+1} = \frac{1}{-1} = -1$$

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

$$C \begin{vmatrix} 1 & 1 \\ 1 & 1 \end{vmatrix}$$

$$AM = \frac{|1+1-3|}{\sqrt{1+1}} = \frac{1}{\sqrt{2}} = \frac{1}{\sqrt{2}}$$

$$\begin{cases} 2y-x=3 \\ 2y-ax=2 \end{cases} \xrightarrow{\text{تفاضل}} \begin{cases} y-\frac{1}{2}x=\frac{3}{2} \\ y-\frac{a}{2}x=1 \end{cases} \rightarrow a=2 \quad 2y-x=1 \rightarrow 2y-x=3$$

$$d = \frac{|3-1|}{\sqrt{1+4}} = \frac{2}{\sqrt{5}} = \frac{2\sqrt{5}}{5} \rightarrow r = \frac{3}{\sqrt{5}} \rightarrow s = \pi r^2 = \pi \times \frac{9}{5} = \frac{9\pi}{5}$$

$$a=-1, AB = y-2 = -1(x-2) \rightarrow y = -x+4$$

$$a=-1 \rightarrow a'=-1 \quad y+2=1(x+1) \rightarrow y = x-1$$

$$\begin{cases} y-x=4 \\ y-x=-1 \end{cases}$$

$$2y=3 \rightarrow y = \frac{3}{2}, x = \frac{5}{2}$$

$$MH = \sqrt{(3-\frac{5}{2})^2 + (2-\frac{3}{2})^2} = \frac{1}{\sqrt{2}}$$

$$(m+1)x - (2m-1)y + 1 = d \rightarrow \frac{m+1}{2m-1} = a_1$$

$$(2m-2)x + (d-m)y - 3 = d \rightarrow \frac{2m-2}{-d+m} = a_2$$

$$\frac{m+1}{2m-1} = \frac{d-m}{2m-2} \rightarrow dm^2 - 13m + 11 = 0$$

به این معادله می توانیم از روش فاکتوریزاسیون استفاده کنیم

$$\begin{cases} AB = x + y = r \\ AC = y = rx - 1 \\ BC = x + y = r \end{cases} \quad A \begin{vmatrix} 1 \\ 1 \\ 1 \end{vmatrix} \quad B = \begin{vmatrix} a \\ -1 \end{vmatrix} \quad M \begin{vmatrix} 1 \\ \frac{1}{r} \\ \frac{1}{r} \end{vmatrix}$$

$$AM = \sqrt{\left(1 - \frac{1}{r}\right)^2 + \left(1 - \frac{1}{r}\right)^2} = \frac{\sqrt{2}}{r}$$

$$AH = \frac{|1 + 1 - r|}{\sqrt{2}} = \frac{r}{\sqrt{2}} = \sqrt{r}$$

$$\frac{AM}{AH} = \frac{\frac{\sqrt{2}}{r}}{\sqrt{r}} = \frac{\sqrt{2}}{r\sqrt{r}} = \frac{2}{r}$$

$$\begin{vmatrix} A \\ 0 \end{vmatrix} \begin{vmatrix} 0 \\ B \end{vmatrix} \quad y - B = -\frac{1}{r}(x - A) \rightarrow y = -\frac{1}{r}x + \frac{A}{r} + B$$

$$\frac{x}{A} + \frac{y}{B} = 1 \rightarrow \frac{x}{rB} + \frac{y}{B} = 1 \rightarrow x + y = rB \rightarrow \frac{d}{\sqrt{2}} = \frac{|a + 0 - rB|}{\sqrt{2}}$$

$$a = \frac{B - 0}{0 - A} = -\frac{B}{A} = -\frac{1}{r} \rightarrow A = rB \rightarrow |-rB| = 1 \rightarrow \begin{cases} rB = 1 \rightarrow B = \frac{1}{r} \rightarrow a = 1 \\ -rB = 1 \rightarrow B = -\frac{1}{r} \rightarrow a = -1 \end{cases}$$

$$AB = \sqrt{A^2 + B^2} = \sqrt{2}$$

$$\begin{aligned} my - ex = rm &\rightarrow y = \dots \rightarrow x = -\frac{m}{r} \Rightarrow \frac{d}{r} \rightarrow m = -d \\ y + mx = x + r &\rightarrow y = \dots \rightarrow x = \frac{-r}{1-m} \Rightarrow \frac{d}{r} \rightarrow m = \frac{9}{2} \end{aligned}$$

$$m = -d \quad \underline{m = \frac{9}{2}} \rightarrow -d \times \frac{9}{2} = -9$$

$$\begin{aligned} y = rx - r \quad m = r \quad y = rx - r \rightarrow x = 0 \rightarrow \begin{vmatrix} 0 \\ -r \end{vmatrix} \\ M \begin{vmatrix} r \\ -r \end{vmatrix} \quad y + 1 = r(x - 1) \rightarrow y = rx - r \end{aligned}$$

$$\begin{cases} r = \frac{0 + x'}{r} \rightarrow x' = r \\ -r = \frac{-r + y'}{r} \rightarrow y' = -1 \end{cases} \quad \begin{vmatrix} r \\ -1 \end{vmatrix}$$

$$A \begin{vmatrix} 1 \\ r \end{vmatrix} \quad y = a + x \quad A(a, b) \quad |b - a| = ?$$

$$|b - a| = |r + r| = 1d$$

$$x_B = \frac{1 + a}{r} = -1 \rightarrow a = -r$$

$$y_B = \frac{r + b}{r} = r \rightarrow b = r$$