

1- شیب شماره 14: 1 یا 1/2
 $m = (\frac{1+\varepsilon}{r}, \frac{1-y}{r}) = m(\frac{1}{2}, 1)$
 $A(1, -4) / B(1, 1)$
 $AB = \frac{1 - (-4)}{1 - \varepsilon} = -\sqrt{5}$
 $y - 1 = \frac{1}{2}(x - 1) \Rightarrow x - 2y + 1 = 0$ پاسخ

$A(1, 1) \quad B(-1, 2) \quad C(-1, 2)$ BC خط متوازی: $BC = \sqrt{(-1+1)^2 + (2-2)^2} = 0$
 AH خط عمود: $\frac{y-2}{-1-1} = -\frac{x}{2} \Rightarrow y-2 = -\frac{x}{2} \Rightarrow 2x + 2y - 4 = 0$
 BC از A فاصله: $d = \frac{|2(1) + 2(1) - 4|}{\sqrt{2^2 + 2^2}} = 0 \rightarrow AH = r$ $BC - AH = 0 - 2 = -2$ جواب

$2y - x = 1 \quad / \quad 4y = 2x + 2$
 $d = \frac{y}{\sqrt{5}} \rightarrow \frac{y}{\sqrt{5}} = \frac{1}{\sqrt{5}} \Rightarrow y = 1$
 $d = \frac{|ax_1 + by_1 + c|}{\sqrt{a^2 + b^2}} \Rightarrow \frac{|-1(0) + 2(\frac{1}{2}) - 1|}{\sqrt{1+4}} = 0$
 $\frac{y}{\sqrt{5}} \times \frac{\sqrt{5}}{\sqrt{5}} = \frac{y\sqrt{5}}{5}$ 1,5

$A(1, 2) / B(1, 1) / C(-1, 2)$ $m = (\frac{2+r}{r}, \frac{1+r}{r}) = (\frac{3}{2}, 2)$
 $m_{AB} = \frac{1-2}{1-1} = \frac{-1}{0} = \infty$
 $y - 2 = -1(x - 1) \Rightarrow y = -x + 3$
 $y - 1 = 1(x + 1) \Rightarrow y = x + 2$
 $x + 2 = -x + 3 \Rightarrow 2x = 1 \Rightarrow x = \frac{1}{2}$
 $y = \frac{1}{2} + 2 = \frac{5}{2}$ $H(\frac{1}{2}, \frac{5}{2})$
 $m_{CH} = \sqrt{(\frac{1}{2})^2 + (\frac{5}{2})^2} = \frac{\sqrt{26}}{2}$
 $CH: y = x + 2$
 $m_{CH} = \frac{|1 - 1 + 2|}{\sqrt{1^2 + 1^2}} = \frac{\sqrt{2}}{2}$

$(\frac{m+1}{a})x - (\frac{r-m-\varepsilon}{b})y + 1 = 0$
 $(\frac{r-m-\varepsilon}{a})x + (\frac{a-m}{b})y - \frac{r}{c} = 0$
 $y = \frac{-(r-m-\varepsilon)}{a-m}x + \frac{r}{a-m}$
 $m_1 = \frac{-(r-m-\varepsilon)}{a-m}$
 $m_2 = y = \frac{m+1}{r-m}x + \frac{1}{r-m} \Rightarrow m_2 = \frac{m+1}{r-m}$
 $(\frac{-(r-m-\varepsilon)}{a-m} \times \frac{m+1}{r-m}) = (1) \Rightarrow \frac{(-r + m + \varepsilon)(m+1)}{(a-m)(r-m)} \Rightarrow \frac{r^2 + m - r}{r^2 - 1\varepsilon m + r} = -1 \Rightarrow$
 $r^2 + m - r = -r^2 + 1\varepsilon m - r \Rightarrow 2r^2 - 1\varepsilon m + 1\varepsilon = 0$

$\Delta = b^2 - 4ac \Rightarrow 144 - 4 \times 1 \times 1 = 140$ $\Delta < 0$

هیچ جوابی برای m وجود ندارد

$$\begin{cases} AB: x+2y=c \\ AC: y=2x-1 \\ BC: x+y=2 \end{cases} \quad \begin{cases} x+2y=c \\ y=2x-1 \end{cases} \quad x+2(2x-1)=c \Rightarrow x+4x-2=c \Rightarrow \boxed{x=1} \quad y=2(1)-1=1 \quad \boxed{A(1,1)}$$

$$BC, AB: \begin{cases} x+2y=c \\ x+y=2 \end{cases} \Rightarrow (x+2y)-(x+y)=c-2 \Rightarrow y=-1 \quad x+(-1)=2 \Rightarrow x=3 \quad \boxed{B(3,-1)}$$

$$BC, AC: \begin{cases} y=2x-1 \\ x+y=2 \end{cases} \Rightarrow x+(2x-1)=2 \Rightarrow 3x=3 \Rightarrow x=1 \quad y=2(1)-1=1 \quad \boxed{C(1,1)}$$

$$M = \left(\frac{1+3}{2}, \frac{-1+1}{2} \right) = \left(\frac{4}{2}, \frac{0}{2} \right) = (2, 0)$$

$$AM = \sqrt{\left(1-\frac{4}{2}\right)^2 + \left(1-\frac{0}{2}\right)^2} = \frac{\sqrt{2}}{2}$$

$$\frac{AM}{AH} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$$

المسافة AH:

$$AH = \frac{|1+1-2|}{\sqrt{1^2+1^2}} = \frac{0}{\sqrt{2}} = 0$$

$$m = -\frac{1}{2} \quad y = -\frac{1}{2}x + b \Rightarrow 0 = -\frac{1}{2}b + 2 \Rightarrow b = 4 \quad d = \frac{|c|}{\sqrt{b^2+a^2}} = \frac{|-2b|}{\sqrt{1+1}} = \sqrt{2} \Rightarrow$$

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

$$(a=1, b=2, c=-2b)$$

$$|b| = 2$$

$$AB = \sqrt{(1-3)^2 + (1-(-1))^2} = \sqrt{4+4} = \sqrt{8} = 2\sqrt{2}$$

$$0 = -\frac{1}{2}x + 4 \Rightarrow x = 8$$

$$B(8,0)$$

نقطة تقاطع المحاور

$$A(0,4)$$

$$\begin{cases} my - rx = rm \\ y + mx = x + r \end{cases}$$

$$\begin{cases} my = rm + rx \Rightarrow y = r + \frac{r}{m}x \\ y = x + r - mx \Rightarrow y = x(1-m) + r \end{cases}$$

$$r = \frac{r}{m}$$

$$\frac{y-r}{\frac{r}{m}} = x \Rightarrow x_1 = -\frac{m}{r}$$

$$\frac{y-r}{1-m} = xr \Rightarrow \boxed{xr = \frac{-r}{1-m}}$$

$$x_2 - x_1 = \frac{r}{r} \Rightarrow \left| \frac{-r}{1-m} + \frac{m}{r} \right| = \frac{r}{r}$$

$$\frac{-r + m + m^2}{r - rm} = \frac{r}{r} \Rightarrow rm^2 - 1rm + 1 = 0$$

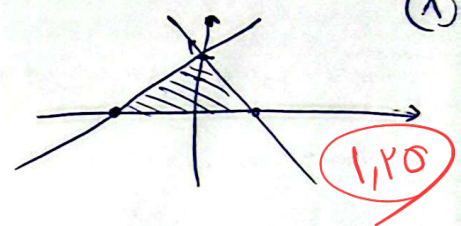
$$\Delta = b^2 - 4ac \Rightarrow 1 - 4(1)(1) = -3$$

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

$$m = 1, \quad m^2 - m + 1 = 0$$

$$r_{x-1} = -r$$

$$\frac{c}{a} = -1$$



$$m = \frac{-b \pm \sqrt{\Delta}}{2a} \Rightarrow \frac{1 \pm \sqrt{-3}}{2} = \frac{1 \pm i\sqrt{3}}{2}$$

المسافة

$$y = 2x - 2$$

$$-x - y' = 2(1 - x') - 2 \Rightarrow -x - y' = 1 - 2x' - 2 \Rightarrow$$

$$y' = 2x' - 1 \Rightarrow y = 2x - 1$$

عابر

(9)

3

$$A(1, 2)$$

$$A'(a, b)$$

$$ax + by + c = 0 \Rightarrow -x + y - a = 0$$

(10)

$$y = x + a \Rightarrow y - x - a = 0$$

$$a = -1, b = 1, c = -a$$

$$x' = x_0 - \frac{(ax_0 + by_0 + c) \cdot a}{b^2 + a^2}$$

$$y' = y_0 - \frac{(ax_0 + by_0 + c) \cdot b}{b^2 + a^2}$$

3

$$ax_0 + by_0 + c = (1)(-1) + 2(1) - a = -1$$

$$a^2 + b^2 = 2$$

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

$$y' = 2 - \frac{2(1)(-1)}{2} = 4$$

$$A'(-1, 4)$$

$$2b - a = 2(4) - (-1)$$

$$= 9$$

ب

ب