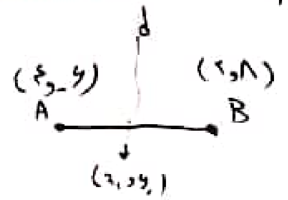
باسمه تعالی   A · کلاس یازدهم   امتحان تکلیف شماره ۱۴۰۰/   ۱۹   نام و نام خانوادگی: علی رابتی

۱- (۲)



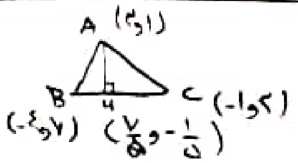
$x_1 = \frac{4+2}{2} = 3$ $y_1 = \frac{8-6}{2} = 1$

$y = \frac{1}{7}x + b$

$1 = \frac{3}{7} + \frac{4}{7} \Rightarrow 7y = x + 4$ ✓

$m\,AB = \frac{8-(-6)}{2-4} = \frac{14}{-2} = -7 \Rightarrow m\,d = \frac{1}{7}$

۲- (۲)



$BC = \sqrt{(-3)^2 + (4)^2} = 5$ $y = \frac{3}{4}x + b = \frac{3}{4}x - \frac{5}{4}$

$m\,BC = \frac{7-3}{-4+1} = \frac{4}{-3} \Rightarrow m\,AH = \frac{3}{4}$ $\{4y = 3x - 5$

$H \begin{cases} 4y = 3x - 5 \\ y = -\frac{4}{3}x + \frac{5}{3} \Rightarrow 3y = -4x + 5 \end{cases}$ $1 = \frac{9}{4} + b \Rightarrow b = -\frac{5}{4}$

$AH = \sqrt{(3-\frac{7}{5})^2 + (1+\frac{1}{5})^2}$ $BC - AH = 5 - 2 = 3$ ✓

$\frac{64}{25} + \frac{36}{25} = \sqrt{\frac{100}{25}} = 2$

$9x - 15 = -16x + 20$

$25x = 35$

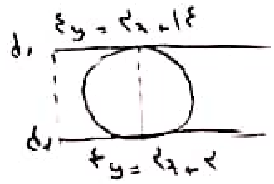
$x = \frac{35}{25} = \frac{7}{5}$

۳- (۲)

دو خط موازی $\Rightarrow m_1 = m_2$

$2y - x = 7 \Rightarrow 2y = x + 7 \Rightarrow m = \frac{1}{2}$

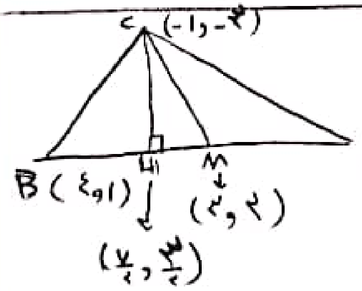
$4y = ax + 2$ $4y = ax + 2 \Rightarrow m = \frac{1}{2} = \frac{a}{4} \Rightarrow a = 2$



$d_1 d_2 = \frac{|c - c'|}{\sqrt{a^2 + b^2}} = \frac{|14 - 2|}{\sqrt{16 + 4}} = \frac{12}{\sqrt{20}}$ = قطر دایره ← $\frac{6}{\sqrt{20}}$ = شعاع دایره

$S = \pi r^2 = (\frac{6}{\sqrt{20}})^2 \pi = \frac{36}{20}\pi = \frac{9}{5}\pi$ ✓

۴- (۲)



$m\,AB = \frac{2-1}{3-4} = -1 \Rightarrow m\,CH = 1$

معادله CH: $y_1 = x - 2$ $y_2 = -x + 5$ معادله AB $y_1 = y_2 \Rightarrow$

H: $x - 2 = -x + 5$

$2x = 7$

$x = \frac{7}{2}$

$MH = \sqrt{(3 - \frac{7}{2})^2 + (2 - \frac{3}{2})^2} = \frac{\sqrt{2}}{2}$ ✓

$\frac{1}{4}$ $\frac{1}{4}$

۵- (۲)

$m_1 = -\frac{1}{m_2}$ $m_1 \times m_2 = -1$

$(3m-2)x + (5-m)y - 7 = 0$ $m_1 = \frac{3m-2}{5-m}$

$(m+1)x - (2m-4)y - 1 = 0$ $m_2 = \frac{m+1}{4-2m}$

$(m+1)(3m-2) = (2m-4)(5-m)$

$3m^2 + m - 2 = -2m^2 + 14m - 20$

$5m^2 - 13m + 18 = 0$

⇓

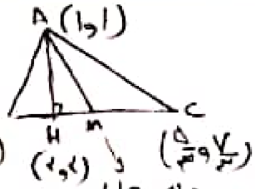
$\Delta < 0 \Rightarrow$ غیرممکن

به ازای هیچ مقدار m این رابطه برقرار نیست ✓ $\varnothing$

$m_1 \times m_2 = \frac{3m-2}{5-m} \times \frac{m+1}{4-2m} = -1 \Rightarrow \frac{3m-2}{5-m} = -\frac{(4-2m)}{m+1} \Rightarrow \frac{3m-2}{5-m} = \frac{2m-4}{m+1}$

۶-

$\begin{cases} AB: x+2y=3 \\ AC: y=2x-1 \\ BC: x+y=4 \end{cases}$



$BC = y=-x+4 \Rightarrow AH = y=x$

$H \Rightarrow -x+4=x$, $2x=4$, $x=2$

$AB: 2y=-x+3$

$AC: y=2x-1 \Rightarrow A: \quad 5=5x$, $1=x \Rightarrow y=1$

$-x+3=4x-2$

$AB: 2y=-x+3$
$BC: y=-x+4 \Rightarrow B: \quad -x+3=-2x+8$, $x=5$, $y=-1$

$AC = y=2x-1$
$BC = y=-x+4 \Rightarrow C: \quad 2x-1=-x+4$, $3x=5$, $x=\frac{5}{3}$, $y=\frac{7}{3}$

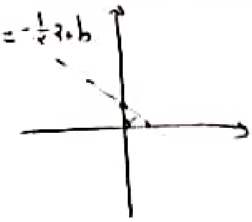
$M=\left(\frac{10}{3}, \frac{2}{3}\right)$

$\frac{AM}{AH} = \frac{\sqrt{(\frac{7}{3})^2+(-\frac{1}{3})^2}}{\sqrt{2}} = \frac{\sqrt{\frac{50}{9}}}{\sqrt{2}} = \frac{\sqrt{50}}{3\sqrt{2}} = \frac{5\sqrt{2}}{3\sqrt{2}} = \boxed{\frac{5}{3}}$ ✓

$\boxed{\frac{5}{3}}$ ✓ (۲)

۷-

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



مبدا $(0,0)$ ، $d=\frac{|ax_0+by_0-c|}{\sqrt{a^2+b^2}} = \sqrt{20}$ (۲)

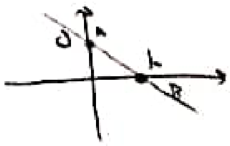
$\frac{2|c|}{\sqrt{5}} = \sqrt{20} = 2\sqrt{5}$ $\quad \frac{1}{4}+1$

$|c| = \sqrt{5}\cdot\sqrt{5} = 5$ $\quad c=\pm 5$

$y=-\frac{1}{2}x\pm 5$

$2y=-x+10$

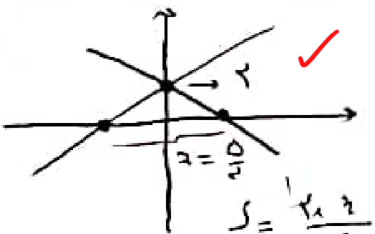
$2y=-x-10$



$A=(0,5)$ $\quad B=(10,0)$

$AB = \sqrt{25+100} = \sqrt{125} = \boxed{5\sqrt{5}}$ ✓

۸-



$y=(1-m)x+2$ $\quad 0=(1-m)x+2$ $\quad (m-1)x_1=2$ $\quad x_1=\frac{2}{m-1}$

$my=4x+4m$ $\quad 0=4x+4m$ $\quad 4x_2=-4m$ $\quad 4x_2=-m$

$x=x_2-x_1$ $\quad x_2=-\frac{m}{4}$ $\quad x_2=-\frac{m}{2}$ ✓

$S=\frac{2\times x}{2}=\frac{5}{2}$ $\quad \frac{5}{2}=-\frac{m}{2}-\frac{2}{m-1}$ جواب صفحه بعد ...

$5=-m+\frac{4}{m-1} = 5m-5=-m^2+m+4 \Rightarrow$ ~~$m^2+4m-9=0$~~

~~9~~ (۱)

۹-

$y=2x-3$ $\quad y=2x-7$ $\quad \boxed{y=2x-9}$ ✓ (۲)

$M(2,2)$ $\quad M(2,2)$

$y=2x-3 \longrightarrow ax+by=\frac{c+c'}{2}$ $\quad \frac{-3+c'}{2}=-6$

$\Rightarrow c'=-9$

۱۰-

$(1,2)$ $\quad y=x-5$ $\quad y=-x+3$ (۲)

$(-1,4)$ $\quad A'(a,b)$

$-x+3=x-5$

$-2=2x$

$-1=x$

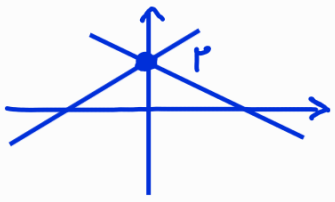
$y=4$

$(1,2) \xrightarrow{-2,\,+2} (-1,4) \xrightarrow{-2,\,+2} (a,b)$ $\quad a=-3$ $\quad b=6$

$2b-a=12+3=\boxed{15}$ ✓

$y = \frac{۴}{m}x + ۲$

$y = (۱-m)x + ۲$



هر دو خط در نقطه
(۰،۲) متقاطع اند پس ارتفاع
مثلث ۲ واحد است

حالا در ربع سوم محل برخورد شون با محور x :

$y = \frac{۴}{m}x + ۲ \xrightarrow{y=۰} x = \frac{-m}{۲}$

$y = (۱-m)x + ۲ \xrightarrow{y=۰} x = \frac{۲}{m-۱}$

$S_{\Delta} = \left| \frac{۲}{m-۱} - (-\frac{m}{۲}) \right|$

$S_{\Delta} = \left| \frac{m^۲ - m + ۴}{۲(m-۱)} \right| \times ۲ \times \frac{۱}{۲} = \frac{۵}{۲} \rightarrow$

- معادله اول : $m = ۳$
- معادله دوم : $\Delta > ۰ \rightarrow \frac{c}{a} = -۱$

(۳-) حاصل ضرب مقادیر m