

نام و نام خانوادگی حسین رضایی پاسخنامه تشریحی تکلیف شماره ۱۶ کلاس اینترم - بهمن ۱۳۹۶

۱

$B(2,1)$
 $A(0,-4)$

$m_{AB} = \frac{1-(-4)}{2-0} = \frac{5}{2}$
 $AB: y - (-4) = \frac{5}{2}(x - 0) \Rightarrow y = \frac{5}{2}x - 4$

$m' = -\frac{2}{5}$
 $y - 1 = -\frac{2}{5}(x - 2) \Rightarrow y = -\frac{2}{5}x + \frac{9}{5}$

$\frac{5}{2}x - 4 = -\frac{2}{5}x + \frac{9}{5} \Rightarrow \frac{25x - 20}{10} = \frac{-2x + 18}{10} \Rightarrow 25x - 20 = -2x + 18 \Rightarrow 27x = 38 \Rightarrow x = \frac{38}{27}$
 $y = \frac{5}{2} \cdot \frac{38}{27} - 4 = \frac{95}{27} - 4 = \frac{95 - 108}{27} = -\frac{13}{27}$

۲

$A(3,1)$
 $B(-5,7)$
 $C(-1,3)$

$m_{AB} = \frac{7-1}{-5-3} = -\frac{6}{8} = -\frac{3}{4}$
 $AB: y - 1 = -\frac{3}{4}(x - 3) \Rightarrow y = -\frac{3}{4}x + \frac{17}{4}$

$m_{BC} = \frac{3-7}{-1-(-5)} = \frac{-4}{4} = -1$
 $BC: y - 7 = -1(x + 5) \Rightarrow y = -x + 2$

$m_{AC} = \frac{3-1}{-1-3} = \frac{2}{-4} = -\frac{1}{2}$
 $AC: y - 1 = -\frac{1}{2}(x - 3) \Rightarrow y = -\frac{1}{2}x + \frac{5}{2}$

$\Delta = \frac{1}{2} |x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$
 $\Delta = \frac{1}{2} |3(7-3) + (-5)(3-1) + (-1)(1-7)| = \frac{1}{2} |12 - 8 + 6| = \frac{1}{2} |10| = 5$

۳

$2x + y = 7$
 $3x - y = 5$

$\Rightarrow \begin{cases} y = 7 - 2x \\ 3x - (7 - 2x) = 5 \end{cases} \Rightarrow \begin{cases} y = 7 - 2x \\ 5x - 7 = 5 \end{cases} \Rightarrow \begin{cases} y = 7 - 2x \\ 5x = 12 \end{cases} \Rightarrow \begin{cases} y = 7 - \frac{24}{5} \\ x = \frac{12}{5} \end{cases}$

$S = \frac{1}{2} |x_1y_2 - x_2y_1| = \frac{1}{2} |\frac{12}{5} \cdot \frac{14}{5} - \frac{24}{5} \cdot \frac{12}{5}| = \frac{1}{2} |\frac{168}{25} - \frac{288}{25}| = \frac{1}{2} |\frac{-120}{25}| = \frac{1}{2} \cdot \frac{120}{25} = \frac{12}{5}$

۴

$A(2,3)$
 $B(4,1)$
 $C(-1,-3)$

$m_{AB} = \frac{1-3}{4-2} = -1$
 $AB: y - 3 = -1(x - 2) \Rightarrow y = -x + 5$

$m_{BC} = \frac{-3-1}{-1-4} = \frac{-4}{-5} = \frac{4}{5}$
 $BC: y - 1 = \frac{4}{5}(x - 4) \Rightarrow y = \frac{4}{5}x - \frac{11}{5}$

$m_{AC} = \frac{-3-3}{-1-2} = \frac{-6}{-3} = 2$
 $AC: y - 3 = 2(x - 2) \Rightarrow y = 2x - 1$

$\Delta = \frac{1}{2} |x_1(y_2 - y_3) + x_2(y_3 - y_1) + x_3(y_1 - y_2)|$
 $\Delta = \frac{1}{2} |2(1-(-3)) + 4(-3-(-1)) + (-1)(-1-1)| = \frac{1}{2} |2(4) + 4(-2) + (-1)(-2)| = \frac{1}{2} |8 - 8 + 2| = \frac{1}{2} |2| = 1$

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$(m+1)x - (2m-5)y + 1 = 0$
 $(3m-2)x + (5-m)y + 7 = 0$

$\Rightarrow \begin{cases} (m+1)x - (2m-5)y = -1 \\ (3m-2)x + (5-m)y = -7 \end{cases}$

$\Delta = \begin{vmatrix} m+1 & -(2m-5) \\ 3m-2 & 5-m \end{vmatrix} = (m+1)(5-m) - (-(2m-5)(3m-2))$
 $\Delta = (m+1)(5-m) + (2m-5)(3m-2)$
 $\Delta = 5m + 5 - m^2 - 5m + m^2 + 6m^2 - 4m - 15m + 10 = 6m^2 - 14m + 15$

لطفاً از بالا راست، اصل ها را بنویسید :

$AB: x+y=1$ و $AC: y=2x+1$ و $BC: x+y=2$

$\frac{AM}{AH} = ?$

A: $\frac{AC}{AB} \rightarrow \frac{2x+1}{x+y} \rightarrow \frac{2x+1}{x+1-x} \rightarrow \frac{2x+1}{1} \rightarrow 2x+1 \rightarrow AC=1$

B: $\frac{BC}{AB} \rightarrow \frac{x+y}{x+y} \rightarrow \frac{2}{2} \rightarrow 1 \rightarrow BC=1$

C: $\frac{AC}{BC} \rightarrow \frac{2x+1}{x+y} \rightarrow \frac{2x+1}{2} \rightarrow x+\frac{1}{2} \rightarrow AC=\frac{1}{2}$

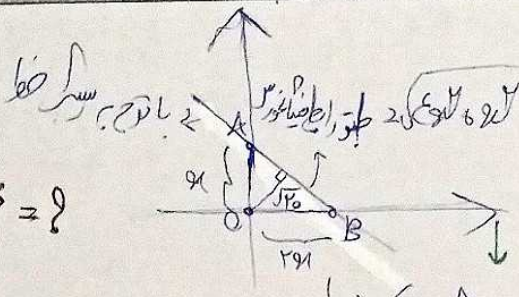
$M(\frac{A+B+C}{3}) \rightarrow M(\frac{(1,1)+(2,2)+(0.5,1)}{3}) \rightarrow M(\frac{(3.5,4)}{3}) \rightarrow M(1.16, 1.33)$

$m = -\frac{1}{2}$

B و A
در نقطه
بایستی
مستقیم

$\Rightarrow B \perp A = ?$

فاصله $\rightarrow \sqrt{2}$

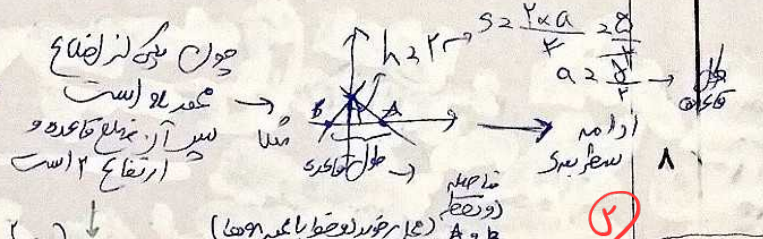


$AB = \sqrt{2}$

$\sqrt{2} \times \frac{1}{\sqrt{2}} = 1$

$\frac{1}{\sqrt{2}} \times \sqrt{2} = 1$

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



$(1-m)x+1 = (\frac{1}{m})x+1 \rightarrow (1-m)x = \frac{1}{m}x \rightarrow x = \frac{1}{m-1}$

$\frac{1}{m-1} + m = 2 \rightarrow \frac{1}{m-1} = 2-m \rightarrow 1 = (2-m)(m-1) \rightarrow 1 = 2m-2-m^2+1 \rightarrow m^2-2m+1=0 \rightarrow (m-1)^2=0 \rightarrow m=1$

$y = 2x+1$

$M(2,2)$ و $x+y=2 \rightarrow x=2-y$

مکان
قرینه
نسبت
به

$y \text{ و } y' \rightarrow 2-y \rightarrow y = 2-y'$

$y' = 2x'-1$

$A'(1,1)$
 $AC(1,1)$
نسبت
 $y = x+1$
است

$m = -1$
 $AC(1,1) \rightarrow -1 \times 1 = -1$
 $BC(2,2) \rightarrow -1 \times 2 = -2$
 $AB(1,1) \rightarrow -1 \times 1 = -1$

ابتدا نقطه A را در خط y قرار دهیم :
(نسبت خط عمود و عمود)
خط $y = x+1$

حال محل / فاصله را حساب کنیم که نقطه ای است که A و A' نسبت به آن قرینه هم اند :

$-x+1 = 2x+1 \rightarrow -x = 2x \rightarrow x = -1$
 $-2 = 2x \rightarrow x = -1$
 $-1 = 2x \rightarrow x = -1$

$a = \frac{1}{2}$
 $b = \frac{1}{2}$

$A'(-1,1)$