فرانک آقایی — تکلیف شماره ی ۱۶ — یازدهم دختر C

1.

$$\frac{\Delta y}{\Delta x} = \frac{-6-8}{4-2} = \frac{-14}{2} = -7 \rightarrow \frac{1}{7}x + b = y \xrightarrow{(3,1)} \frac{3}{7} + b = 1 \rightarrow$$

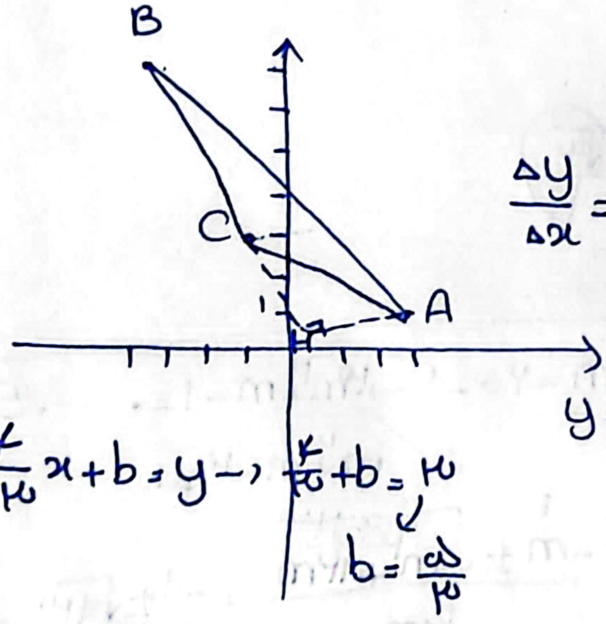
$$\frac{1}{7}x + \frac{4}{7} = y$$

$$\begin{cases} \frac{4+2}{2} = 3 \\ \frac{-6+8}{2} = 1 \end{cases}$$

2.

$$\sqrt{(-4+1)^2 + (7-3)^2} = \sqrt{9+16} = \boxed{5}$$

BC



$$\frac{\Delta y}{\Delta x} = \frac{7-3}{-4+1} = \frac{4}{-3} \rightarrow \frac{3}{4}x + b = y \rightarrow \frac{9}{4} + b = 1$$

$$b = -\frac{5}{4}$$

$$y = \frac{3}{4}x - \frac{5}{4} \rightarrow \frac{3}{4}x - \frac{5}{4} = \frac{-4}{3}x + \frac{5}{3} \rightarrow$$

$$\frac{4}{-3}x + b = y \rightarrow \frac{4}{3} + b = 3$$

$$b = \frac{5}{3}$$

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

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

$$\sqrt{\left(3 - \frac{7}{5}\right)^2 + \left(1 + \frac{1}{5}\right)^2} = \frac{10}{5} = \boxed{2}$$

$$\frac{64}{25} \qquad \frac{36}{25}$$

$$y = \frac{21}{20} - \frac{5}{4} = -\frac{4}{20} = -\frac{1}{5} = y$$

$$\frac{25}{20}$$

$$5 - 2 = 3$$

3.

$$ax - 4y + 2 = 0 \qquad -x + 2y = 7 \rightarrow 2x - 4y + 14 = 0 \qquad \boxed{\frac{9}{5}\pi}$$

$$\boxed{a = 2} \qquad x - 2$$

$$\frac{|14-2|}{\sqrt{4+16}} = \frac{12\sqrt{20}}{20} \times \frac{1}{2} = \frac{3}{10}\sqrt{20} \times \frac{3}{10}\sqrt{20} \times \pi$$

شعاع

.4

$\frac{\Delta y}{\Delta x} = \frac{3-1}{2-4} = \frac{2}{-2} = -1 \rightarrow 1x + b = y \rightarrow -1 + b = -3 \rightarrow b = -2$

$+x - 2 = y$

$\left.\begin{array}{l} x-2=y \\ -x+5=y \end{array}\right\} \rightarrow x-2=-x+5 \rightarrow 2x=7 \rightarrow x=\frac{7}{2} \quad y=\frac{3}{2}$

$-x+b=y \rightarrow -2+b=3 \rightarrow b=5$

$\left| \begin{array}{l} \frac{2+4}{2}=3 \\ \frac{3+1}{2}=2 \end{array}\right. \rightarrow MH = \sqrt{(\underbrace{3-\tfrac{7}{2}}_{\frac{1}{4}})^2 + (\underbrace{2-\tfrac{3}{2}}_{\frac{1}{4}})^2} = \frac{\sqrt{2}}{2}$

.5

$(m+1)(3m-2) = -1 \rightarrow 3m^2 - 2m + 3m - 2 = -1 \rightarrow 3m^2 + m - 1 = 0$

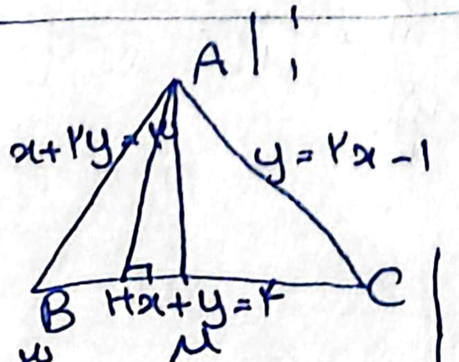
$m^2 + m - 3 = 0$

$m = \frac{-b \pm \sqrt{\Delta}}{2a}$

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

$\frac{-1 \pm \sqrt{1+12}}{6} = \frac{-1 \pm \sqrt{13}}{6} = m$

.6



$A \left| \begin{array}{l} 1 \\ 1 \end{array}\right. \quad B \left| \begin{array}{l} 3 \\ 1 \end{array}\right. \quad C \left| \begin{array}{l} \frac{5}{3} \\ \frac{7}{3} \end{array}\right.$

$\left.\begin{array}{l} y=2x-1 \\ y=4-x \end{array}\right\} 2x-1=4-x \rightarrow 3x=5, \quad x=\frac{5}{3}$

$\left.\begin{array}{l} x=3-2y \\ x=4-y \end{array}\right\} 3-2y=4-y \rightarrow y=1, \quad x=3$

$2x-1=y$

$x+2y=3 \rightarrow y=\frac{3-x}{2} \rightarrow 4x-2=3-x$

$5x=5$

$x=1, \quad y=1$

$M = \left| \begin{array}{l} \frac{3+\frac{5}{3}}{2} = \frac{14}{6} = \frac{7}{3} \\ \frac{\frac{7}{3}+1}{2} = \frac{10}{6} = \frac{5}{3} \end{array}\right.$

$$AM=\sqrt{\underbrace{\left(1-\tfrac{7}{3}\right)^2}_{\frac{16}{9}}+\underbrace{\left(1-\tfrac{5}{3}\right)^2}_{\frac{4}{9}}}=\sqrt{\frac{20}{9}}=\frac{\sqrt{20}}{3}$$

$$AH \to \frac{\Delta y}{\Delta x}=\frac{\frac{7}{3}-1}{\frac{5}{3}-3}=\frac{\frac{4}{3}}{\frac{-4}{3}}=-1 \to -x+b=y \to -3+b=1 \to b=4$$

$$\boxed{-x+4=y}$$

$$x+b=y \to x=y \to -x+4=x \to x=2,\ y=2$$

$$AH=\sqrt{(1-2)^2+(1-2)^2}=\sqrt{1+1}=\sqrt{2} \qquad \frac{AM}{AH}=\frac{\frac{\sqrt{20}}{3}}{\sqrt{2}}=\boxed{\frac{\sqrt{10}}{3}}$$

.7

$$-\frac{1}{2}x+b=y \to -\frac{1}{2}x+B=y \to -\frac{1}{2}(A)+B=0 \to B=\frac{A}{2} \to 2B=A$$

$$\underbrace{A^2}_{(2B)^2}+B^2=20 \to 5B^2=20 \to B^2=4 \to B=2,-2 \quad A=4,-4$$

$$-\frac{1}{2}\times 4+2=0 \to \text{غ}$$

$$\underbrace{-\frac{1}{2}\times -4}_{2}-2=0 \to \text{ق ق} \to A=-4,\ B=-2$$

② ← [illegible]

.8

$$(1-m)x+2=\frac{4}{m}x+4 \to \left((1-m)-\frac{4}{m}\right)x=2$$

$$x=\frac{2m}{m-m^2-4}$$

$$y=(1-m)x+2 \to (1-m)\left(\frac{2m}{m-m^2-4}\right)+2=y$$

$$S=\frac{1}{2}\times x\times \underbrace{(4-2)}_{2} \to \frac{1}{2}x\times 2=\frac{5}{2} \to x=\frac{5}{2} \to \frac{2m}{-m^2+m-4}=\frac{5}{2}$$

$$m=\frac{1\pm\sqrt{401}}{10}\ ✓ \qquad m=\frac{9\pm\sqrt{-319}}{10}\ \text{غ ق غ} \qquad \frac{1+\sqrt{401}}{10}\times\frac{1-\sqrt{401}}{10}=\boxed{-4}$$

•, $x' = x - b \rightarrow x' = x - 2 \rightarrow x = x' + 2$

$y' = y + 2 \rightarrow y = y' - 2$ $\rightarrow y' - 2 = 2x' + 4 - 10 \rightarrow$

$$\boxed{y' = 2x' + 10}$$

$x + 3 - y = 0 \rightarrow \dfrac{|1 - 2 + 3|}{\sqrt{1+1}} = \dfrac{2\sqrt{2}}{\sqrt{2}} = 2\sqrt{2}$

$A(1,2)$

$A'(a,b)$ $\rightarrow \sqrt{(a-1)^2 + (b-2)^2} = \dfrac{4\sqrt{2}}{2} \rightarrow$

$-x + b = y \xrightarrow{\perp} -1 + b = 2 \rightarrow b = 3 \rightarrow -x + 3 = y \rightarrow -x + 3 = x + a$

$-2 = 2x$

$x = -1$

$y = 4$

$\dfrac{1+a}{2} = -1$ $\qquad \dfrac{2+b}{2} = 4 \rightarrow 2 + b = 8 \rightarrow \boxed{b = 6}$

$1 + a = -2$

$\boxed{a = -3}$

$|4| \xrightarrow{+} 3 = \boxed{|a|}$