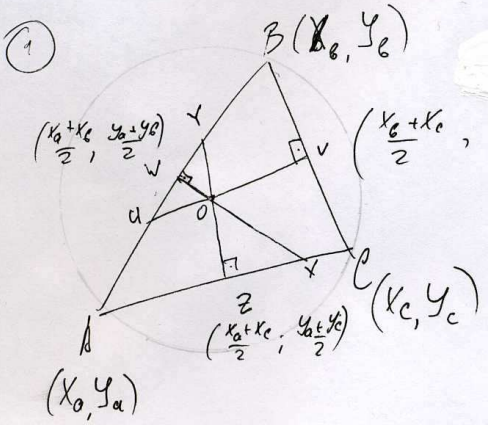
(1)



$AB:\quad y - y_a = (x - x_a)\,\dfrac{y_b - y_a}{x_b - x_a}$

$$y = \underbrace{\left(\frac{y_b - y_a}{x_b - x_a}\right)}_{k_{AB}} x + \frac{-x_a y_b + x_a y_a + y_a x_b - y_a x_a}{x_b - x_a}$$

$WX:\quad k_{WX} = -\dfrac{1}{k_{AB}}$

$$\Rightarrow y_{WX} = -\frac{x_b - x_a}{y_b - y_a}\cdot x + b_{WX}$$

$$\frac{y_a + y_b}{2} = -\left(\frac{x_b - x_a}{y_b - y_a}\right)\cdot\left(\frac{x_a + x_b}{2}\right) + b_{WX}$$

$$b_{WX} = \frac{x_b^2 - x_a^2 + y_b^2 - y_a^2}{2(y_b - y_a)}$$

$$\Rightarrow y = -\left(\frac{x_b - x_a}{y_b - y_a}\right)x + \frac{x_b^2 - x_a^2 + y_b^2 - y_a^2}{2(y_b - y_a)}$$

аналогично,

AC: $y = \left(\frac{y_c - y_a}{x_c - x_a}\right)x + \frac{y_a x_c - x_a y_c}{x_c - x_a}$

YZ: $y = -\left(\frac{x_c - x_a}{y_c - y_a}\right)x + \frac{x_c^2 - x_a^2 + y_c^2 - y_a^2}{2(y_c - y_a)}$

$$\begin{cases} y = -\left(\frac{x_c - x_a}{y_c - y_a}\right)x + \frac{x_c^2 - x_a^2 + y_c^2 - y_a^2}{2(y_c - y_a)} \\ y = -\left(\frac{x_b - x_a}{y_b - y_a}\right)x + \frac{x_b^2 - x_a^2 + y_b^2 - y_a^2}{2(y_b - y_a)} \end{cases} \ominus$$

$$x\left(\frac{x_b - x_a}{y_b - y_a} - \frac{x_c - x_a}{y_c - y_a}\right) = \frac{x_b^2 y_c - x_a^2 y_c + y_b^2 y_c - y_a^2 y_c - x_b^2 y_a + x_a^2 y_a - y_b^2 y_c + y_a^2 y_b - x_c^2 y_b}{2(y_b - y_a)(y_c - y_a)}$$

$$\begin{cases} y = -\left(\frac{x_c - x_a}{y_c - y_a}\right)x + \frac{(x_c - x_a)(x_c + x_a)}{2(y_c - y_a)} + \frac{1}{2}(y_c + y_a) \\ y = -\left(\frac{x_b - x_a}{y_b - y_a}\right)x + \frac{(x_b - x_a)(x_b + x_a)}{2(y_b - y_a)} + \frac{1}{2}(y_b + y_a) \end{cases} \ominus$$

$$\left(\frac{x_b - x_a}{y_b - y_a} - \frac{x_c - x_a}{y_c - y_a}\right)x = \frac{(x_b - x_a)(x_b + x_a)}{2(y_b - y_a)} - \frac{(x_c - x_a)(x_c + x_a)}{2(y_c - y_a)} + \frac{1}{2}(y_b - y_a)$$

$$\left(\frac{(x_b - x_a)(y_c - y_a) - (x_c - x_a)(y_b - y_a)}{(y_b - y_a)(y_c - y_a)}\right) = -1$$

$$x = \frac{(y_c - y_a)(x_b - x_a)(x_b + x_a)}{} = \frac{(x_b + x_a - x_c - x_a)}{2} + \frac{(y_b - y_a)(y_c - y_a)(y_c - y_a)}{2\left((x_b + x_a)(y_c - y_a) - (x_c - x_a)(y_b - y_a)\right)}$$

$$y = -\frac{(x_c - x_a)(x_b - x_c)}{2(y_c - y_a)} + \frac{(y_c - y_a)(y_b - y_c)(x_c - x_a)}{2(-4)} + \frac{x_c^2 - x_a^2 + y_c^2 - y_a^2}{2(y_c - y_a)}$$

(2) $R = \frac{a\,b\,c}{\sqrt{(a+b+c)(-a+b+c)(a-b+c)(a+b-c)}}$

O – известно (центр), нашли в прошл. зад.

X – рассм-я точка

$OX = \sqrt{(x_0-x_x)^2+(y_0-y_x)^2}$

$OX < R$? true : false