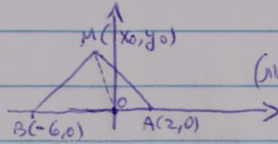


4.27
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המרחק מ-M ל-A שווה למרחק מ-M ל-B
(המרחק מ-M ל-A שווה למרחק מ-M ל-B)

MA: $m = \frac{y_0}{x_0 - 2}$

$$y - 0 = \frac{y_0}{x_0 - 2} (x - 2)$$

$$y = \frac{y_0 x}{x_0 - 2} - \frac{2y_0}{x_0 - 2}$$

MB: $m = \frac{y_0}{x_0 + 6}$

$$y = \frac{y_0}{x_0 + 6} (x + 6)$$

$$y = \frac{y_0 x}{x_0 + 6} + \frac{6y_0}{x_0 + 6}$$

שווה את המרחקים

$$\frac{\left| \frac{-2y_0}{x_0 - 2} \right|}{\sqrt{1 + \left(\frac{y_0}{x_0 - 2} \right)^2}} = \frac{\left| \frac{6y_0}{x_0 + 6} \right|}{\sqrt{1 + \left(\frac{y_0}{x_0 + 6} \right)^2}}$$

$$\left| \frac{-2y_0}{x_0 - 2} \right| \sqrt{1 + \left(\frac{y_0}{x_0 + 6} \right)^2} = \left| \frac{6y_0}{x_0 + 6} \right| \sqrt{1 + \left(\frac{y_0}{x_0 - 2} \right)^2} \quad / ()^2$$

$$\frac{1}{(x_0 - 2)^2} \left(1 + \frac{y_0^2}{(x_0 + 6)^2} \right) = \frac{9}{(x_0 + 6)^2} \left(1 + \frac{y_0^2}{(x_0 - 2)^2} \right)$$

$$\frac{1}{(x_0 - 2)^2} + \frac{y_0^2}{(x_0 - 2)^2 (x_0 + 6)^2} = \frac{9}{(x_0 + 6)^2} + \frac{9y_0^2}{(x_0 + 6)^2 (x_0 - 2)^2}$$

$$(x_0 + 6)^2 = 9(x_0 - 2)^2 + 8y_0^2$$

$$x_0^2 + 12x_0 + 36 = 9x_0^2 - 36x_0 + 36 + 8y_0^2$$

$$8x_0^2 - 48x_0 + 8y_0^2 = 0$$

$$x_0^2 - 6x_0 + y_0^2 = 0$$

$$\boxed{(x_0 - 3)^2 + y_0^2 = 9}$$