

Διακρίνουσα $\Delta = (-25)^2 - 4 \cdot 12 \cdot 12 = 625 - 576 = 49 > 0$

$$\lambda_{1,2} = \frac{25 \pm 7}{24} = \begin{cases} \frac{32}{24} = \frac{4}{3} \\ \frac{18}{24} = \frac{3}{4} \end{cases}$$

Για $\lambda = \frac{4}{3}$: $\lambda x - y + 3 - 2\lambda = 0$

$$\frac{4}{3}x - y + 3 - 2 \cdot \frac{4}{3} = 0 \Leftrightarrow y = \frac{4}{3}x + \frac{1}{3}$$

Για $\lambda = \frac{3}{4}$: $\frac{3}{4}x - y + 3 - 2 \cdot \frac{3}{4} = 0 \Leftrightarrow y = \frac{3}{4}x + \frac{3}{2}$

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$A(-1, -2)$, $B(3, 1)$, $M(x, y)$

$$\vec{MA} = (x+1, y+2) \quad \vec{MB} = (x-3, y-1)$$

$$(MAB) = 8 \Leftrightarrow \frac{1}{2} \begin{vmatrix} x+1 & y+2 \\ x-3 & y-1 \end{vmatrix} = 8 \Leftrightarrow |(x+1)(y-1) - (x-3)(y+2)| = 16$$

$$\Leftrightarrow | \cancel{xy} - x + y - 1 - \cancel{xy} - 2x + 3y + 6 | = 16$$

$$\Leftrightarrow |-3x + 4y + 5| = 16 \Leftrightarrow -3x + 4y + 5 = 16 \quad \vee \quad -3x + 4y + 5 = -16$$

$$\Leftrightarrow -3x + 4y = 11 \quad \vee \quad -3x + 4y = -21$$