

**Soluție**

1. a)  $2 \cdot \overrightarrow{AM} = \overrightarrow{AB} + \overrightarrow{AC} = \overrightarrow{AB} + \overrightarrow{AB} + \overrightarrow{AD}$ ;  $\overrightarrow{AM} = \overrightarrow{AB} + \frac{1}{2} \cdot \overrightarrow{AD} = -\overrightarrow{CD} + \frac{1}{2} \cdot \overrightarrow{AD}$ .

b)  $\overrightarrow{OA} + \overrightarrow{OC} = \overrightarrow{OB} + \overrightarrow{OD}$ . Se notează  $\overrightarrow{OA} = x \cdot \vec{i} + y \cdot \vec{j}$ ,  $(x-3) \cdot \vec{i} + (y-1) \cdot \vec{j} = 3 \cdot \vec{i} + 4 \cdot \vec{j}$ ; deci  $\overrightarrow{OA} = 6 \cdot \vec{i} + 5 \cdot \vec{j}$ .

2. a)  $BC = 17$ ,  $\sin C = \frac{AB}{BC}$ ,  $\cos B = \frac{AB}{BC}$ ;  $17 \sin C + 34 \cos B = 45$ .

b)  $\frac{BC}{\sin A} = \frac{AC}{\sin B}$ ,  $BC = 9\sqrt{2} - 3\sqrt{6}$ .

3. a)  $m_{AB} = \frac{-m+3}{6}$ ,  $m_{CD} = \frac{1-4m}{-9}$ ,  $m_{AB} = m_{CD}$ ,  $m = 1$ .

b)  $CD: x - 3y + 6 = 0$ ;  $d(AB, CD) = d(A, CD) = \frac{13\sqrt{10}}{10}$ .