

Soluție

1. a) $2 \cdot \overrightarrow{CM} = \overrightarrow{CD} + \overrightarrow{CO} = \overrightarrow{CD} + \frac{1}{2} \cdot (\overrightarrow{CD} + \overrightarrow{CB}) = \frac{3}{2} \cdot \overrightarrow{CD} + \frac{1}{2} \cdot \overrightarrow{CB}$; $\overrightarrow{CM} = -\frac{3}{4} \cdot \overrightarrow{AB} - \frac{1}{4} \cdot \overrightarrow{BC}$.

b) $\overrightarrow{BN} + \overrightarrow{PC} = \overrightarrow{BC} + \overrightarrow{CN} + \overrightarrow{PN} + \overrightarrow{NC} = \overrightarrow{BC} + \frac{1}{2} \cdot \overrightarrow{BC} = \frac{3}{2} \cdot \overrightarrow{BC}$.

2. a) $AC = 10$, $AB = \frac{10\sqrt{3}}{3}$. Aria este $\frac{50\sqrt{3}}{3}$.

b) $BC^2 = AB^2 + AC^2 - 2 \cdot AB \cdot AC \cdot \cos A$, $BC = 7$.

3. a) $m_{AB} = \frac{1}{2}$, $m_{BC} = -2$. $m_{AB} \cdot m_{CD} = -1$, deci $AB \perp CB$.

b) Fie M mijlocul segmentului AC , $M\left(-\frac{1}{2}; -2\right)$. $BM: 2x - y - 1 = 0$.