

Soluție

1. a) $2 \cdot \overrightarrow{EF} = \overrightarrow{EA} + \overrightarrow{EC} = \overrightarrow{ED} + \overrightarrow{DA} + \overrightarrow{EB} + \overrightarrow{BC} = \overrightarrow{DA} + \overrightarrow{BC}.$

b) $\vec{v} = 3 \cdot \overrightarrow{MA} - 3 \cdot \overrightarrow{MB} - 2 \cdot \overrightarrow{MA} + 2 \cdot \overrightarrow{MC} = 3 \cdot \overrightarrow{MA} + 3 \cdot \overrightarrow{BM} + 2 \cdot \overrightarrow{BM} + 2 \cdot \overrightarrow{MC} = 3 \cdot \overrightarrow{BA} + 2 \cdot \overrightarrow{BC}.$

2. a) $AC \cdot \cos B + AB \cdot \cos C = AC \cdot \frac{AB}{BC} + AB \cdot \frac{AC}{BC} = 2 \cdot \frac{AB \cdot AC}{BC},$

$$2 \cdot BC \cdot \sin B \cdot \sin C = 2 \cdot BC \cdot \frac{AC}{BC} \cdot \frac{AB}{BC} = 2 \cdot \frac{AB \cdot AC}{BC}.$$

b) $\cos A = \frac{AB^2 + AC^2 - BC^2}{2 \cdot AB \cdot AC}, \quad BC = \frac{7}{3} \cdot AB, \quad AC = \frac{8}{3} \cdot AB, \quad \cos A = \frac{1}{2}, \quad m(\sphericalangle A) = 60^\circ.$

3. a) $AB \parallel CD, \text{ deci } m_{AB} = m_{CD}; \quad m_{AB} = \frac{m-6}{3-1}, \quad m_{CD} = \frac{2m+2}{-1-2}; \quad m = 2.$

b) $AB: 2x + y - 8 = 0, \quad d(AB, CD) = d(C, AB) = \frac{6\sqrt{5}}{5}.$