

### Soluții

$$1.a) \left. \begin{array}{l} \overrightarrow{MA} = \overrightarrow{MC} + \overrightarrow{CA} \\ \overrightarrow{MB} = \overrightarrow{MD} + \overrightarrow{DB} \end{array} \right\} \Rightarrow \overrightarrow{MA} + \overrightarrow{MB} = \overrightarrow{MC} + \overrightarrow{MD} \text{ căci } \overrightarrow{CA} + \overrightarrow{DB} = \vec{0}$$

$$1.b) \left. \begin{array}{l} \overrightarrow{OA} = 3\vec{i} + 2\vec{j} \Rightarrow 3\overrightarrow{OA} = 9\vec{i} + 6\vec{j} \\ \overrightarrow{OB} = -\vec{i} + 2\vec{j} \Rightarrow -\overrightarrow{OB} = \vec{i} - 2\vec{j} \\ \overrightarrow{OC} = \vec{i} \end{array} \right\} \Rightarrow 3\overrightarrow{OA} - \overrightarrow{OB} + \overrightarrow{OC} = 11\vec{i} + 4\vec{j}.$$

Deci coordonatele vectorului sunt (11;4)

$$AC = BC \cdot \sin B = \sqrt{6} - \sqrt{2}.$$

$$AB^2 = BC^2 - AC^2 = 16 - (\sqrt{6} - \sqrt{2})^2 = 16 - 6 - 2 + 4\sqrt{3} = 8 + 4\sqrt{3} = 6 + 2 + 2 \cdot \sqrt{6} \cdot \sqrt{2} =$$

$$2.a) = (\sqrt{6} + \sqrt{2})^2 \Rightarrow AB = \sqrt{6} + \sqrt{2}.$$

$$\sigma[ABC] = \frac{AB \cdot AC}{2} = \frac{6-2}{2} = 2.$$

$$2.b) \frac{BC}{\sin A} = \frac{AC}{\sin B} \Leftrightarrow \frac{4}{\frac{\sqrt{3}}{2}} = \frac{AC}{\frac{\sqrt{2}}{2}} \Rightarrow AC = \frac{4\sqrt{2}}{\sqrt{3}} = \frac{4\sqrt{6}}{3}.$$

$$3.a) AB : 2x + 3y - 6 = 0. \text{ Dacă înlocuim } x = 1 \Rightarrow y = \frac{6-2x}{3} = \frac{4}{3}.$$

$$3.b) AB : \frac{y}{\frac{5}{3}} = \frac{x - \frac{5}{2}}{-\frac{5}{2}} \Leftrightarrow 2x + 3y = 5. \text{ } C(1;1) \text{ verifică ecuația dreptei } AB.$$