Soluții

1.a) $\left.\begin{array}{l}\overrightarrow{AB}+\overrightarrow{BC}+\overrightarrow{CD}=\overrightarrow{AD}\\ \overrightarrow{AF}+\overrightarrow{FE}+\overrightarrow{ED}=\overrightarrow{AD}\end{array}\right\}\Rightarrow \overrightarrow{AB}+\overrightarrow{BC}+\overrightarrow{CD}=\overrightarrow{AF}+\overrightarrow{FE}+\overrightarrow{ED}.$

1.b) $\left.\begin{array}{l}\overrightarrow{BG}=\frac{2}{3}\overrightarrow{BM}, \text{ M mijlocul segmentului } [AC].\\ \overrightarrow{BM}=\frac{1}{2}\left(\overrightarrow{BA}+\overrightarrow{BC}\right)\end{array}\right\}\Rightarrow \overrightarrow{BG}=\frac{1}{3}\left(\overrightarrow{BA}+\overrightarrow{BC}\right),$

2.a) $\triangle ABC$ este dreptunghic isoscel.

$AB=AC=BC\cdot\sin(\sphericalangle B)=27\cdot\frac{\sqrt{2}}{2}\Rightarrow \sigma[ABC]=\frac{AB\cdot AC}{2}=\frac{\frac{729}{4}\cdot 2}{2}=\frac{729}{4}.$

2.b) $BC^2=AB^2+AC^2-2\cdot AB\cdot AC\cdot\cos A\Rightarrow AC^2-2AC+1=0\Rightarrow AC=1.$

3.a) $M(\frac{3}{2};3)\Rightarrow AM=\sqrt{\left(\frac{3}{2}+2\right)^2+\left(3+3\right)^2}=\sqrt{\frac{49}{4}+36}=\frac{\sqrt{193}}{2}.$

3.b) $m_{BC}=-\frac{4}{5}$. Ecuația dreptei cerute satisface: $\frac{y-3}{x+2}=-\frac{4}{5}\Leftrightarrow -4x-8=5y-15\Rightarrow$

$d:4x+5y-7=0.$