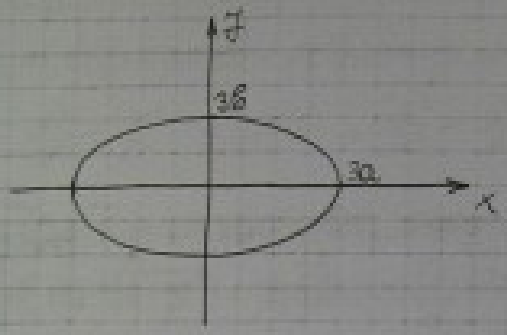
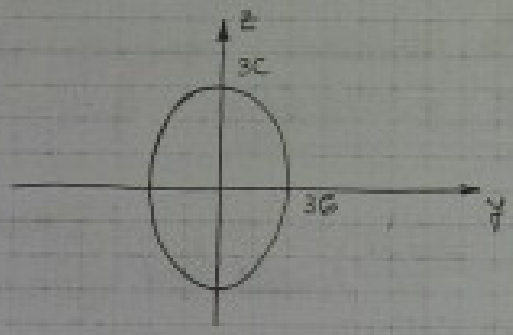
29.02.1992.

35 Израчунати запремину тела одређеног системом неједнакости

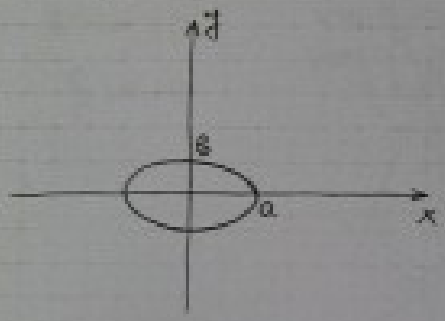
$\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}\leq 9$, $\frac{x^2}{a^2}+\frac{y^2}{b^2}-\frac{z^2}{c^2}\leq 1$ (a,b,c су позитивне константе)

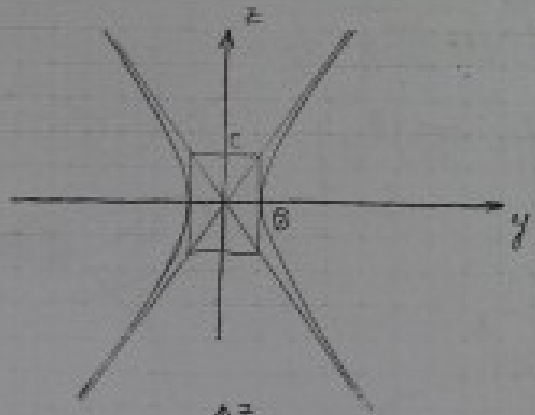
$\frac{x^2}{(3a)^2}+\frac{y^2}{(3b)^2}+\frac{z^2}{(3c)^2}=1$ - елипсоид

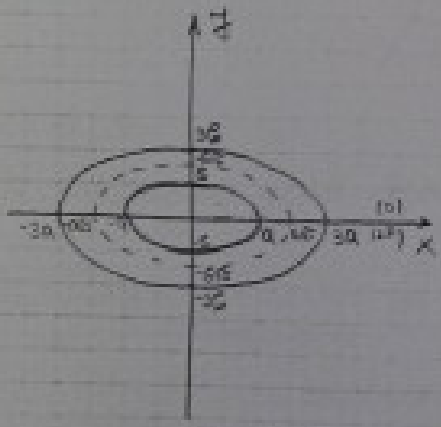


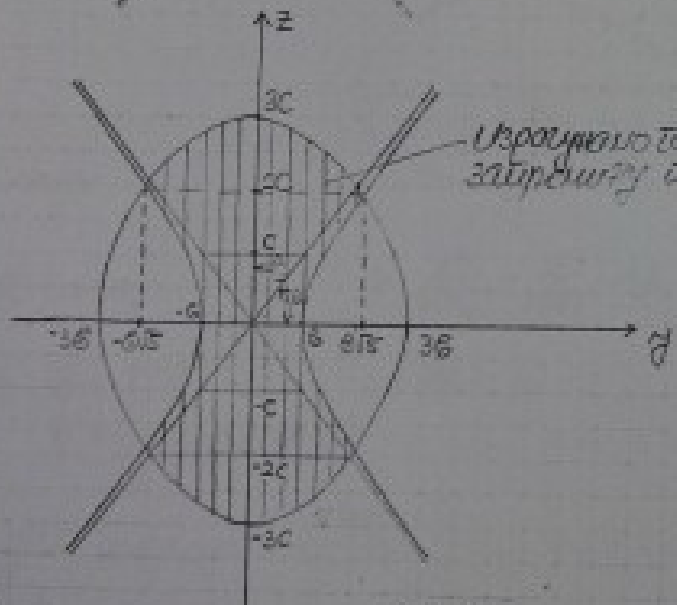


$\frac{x^2}{a^2}+\frac{y^2}{b^2}-\frac{z^2}{c^2}\leq 1$ - Једнотрни хиперболоид









Израчунаћемо горњу запремину па x 2 !

Presek elipsoida i jednokrilnog hiperboloida na kraju su elipse

$$\left.\begin{array}{l}\frac{x^2}{a^2}+\frac{y^2}{b^2}+\frac{z^2}{c^2}=9\\ \frac{x^2}{a^2}+\frac{y^2}{b^2}-\frac{z^2}{c^2}=1\end{array}\right\}\Rightarrow\left.\begin{array}{l}\frac{x^2}{a^2}+\frac{y^2}{b^2}=9-\frac{z^2}{c^2}\\ 9-\frac{z^2}{c^2}-\frac{z^2}{c^2}=1\end{array}\right\}\Rightarrow\left.\begin{array}{l}\frac{x^2}{a^2}+\frac{y^2}{b^2}=9-\frac{z^2}{c^2}\\ z=\pm 2c\end{array}\right\}\Rightarrow\begin{array}{l}\frac{x^2}{a^2}+\frac{y^2}{b^2}=5\\ z=\pm 2c\end{array}$$