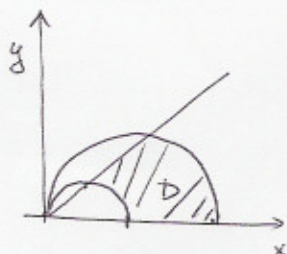


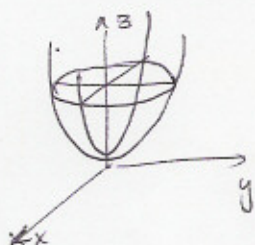
BRACUNAJTE MASO TELESIA

$$G = \{ (x, y, z) \in \mathbb{R}^3 ; 0 \leq y \leq x, x^2 \leq x^2 + y^2 \leq 2x, 0 \leq z \leq x^2 + y^2 \}$$

CE JE $\rho(x, y, z) = k|y|$. (SORAZMERNI ODDALJENOSTI OD RAVNINE $z=0$)



$$\begin{aligned} x^2 + y^2 &= x & x^2 + y^2 &= 2x \\ (x - \frac{1}{2})^2 + y^2 &= (\frac{1}{2})^2 & (x-1)^2 + y^2 &= 1 \end{aligned}$$



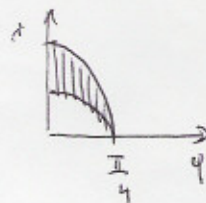
$$m = \iiint_G \rho(x, y, z) dx dy dz$$

$$= \iint_D dx dy \int_0^{x^2+y^2} k|y| dz$$

$$= k \iint_D |y| (x^2 + y^2) dx dy$$

$$\begin{aligned} x^2 \leq x^2 + y^2 \leq 2x \\ \cos^2 \leq 1^2 \leq 2 \cos^2 \\ \cos \leq 1 \leq 2 \cos \end{aligned}$$

$$\begin{aligned} x &= \cos \varphi \\ y &= \sin \varphi \\ y &= 1 \end{aligned}$$



$$= k \int_0^{\frac{\pi}{4}} d\varphi \int_{\cos^2 \varphi}^1 \underbrace{\sin \varphi}_{|y|} \underbrace{t^2}_{x^2+y^2} \underbrace{t}_{|y|} dt = k \int_0^{\frac{\pi}{4}} \sin \varphi \left[\frac{t^5}{5} \right]_{\cos^2 \varphi}^1 d\varphi = \frac{31k}{5} \int_0^{\frac{\pi}{4}} \cos^5 \varphi \sin \varphi d\varphi$$

$$\begin{aligned} \cos \varphi &= t \\ -\sin \varphi d\varphi &= dt \end{aligned}$$

$$= \frac{31k}{5} \int_1^{\frac{\sqrt{2}}{2}} t^5 (-dt) = \frac{31k}{5 \cdot 6} \left[t^6 \right]_{\frac{\sqrt{2}}{2}}^1 = \frac{31k}{30} \left(1 - \frac{1}{8} \right)$$

$$= \frac{31 \cdot 7 k}{30 \cdot 8} = \frac{217k}{240}$$