

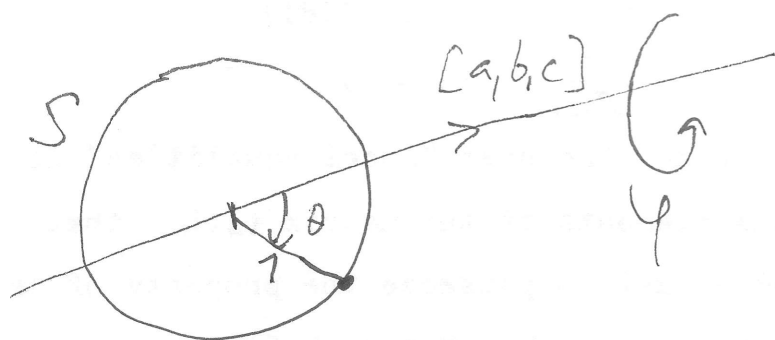
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$$S: x^2 + y^2 + z^2 = 1$$

$$f: \mathbb{R} \rightarrow \mathbb{R}$$

Uvažujeme funkci

$S \ni (x, y, z) \mapsto f(ax + by + cz)$, kde
 $a, b, c \in \mathbb{R}$ sú konštanty.



Zvolíme na S
ríkdnice podľa
obrázku. Potom

určime:

$$\begin{aligned} \int_S f(\underbrace{ax + by + cz}_{\sqrt{a^2 + b^2 + c^2} \cdot 1 \cdot \cos \theta}) &= \int_0^{2\pi} d\varphi \int_0^{\pi} d\theta \sin \theta f(\sqrt{a^2 + b^2 + c^2} \cos \theta) = \\ &= \left| \cos \theta = u \right| = 2\pi \int_1^{-1} (-du) f(\sqrt{a^2 + b^2 + c^2} \cdot u) \end{aligned}$$