

Worksheet: Surface integrals

1. Sketch the parameterized surface S given by $\mathbf{r}(u, v) = \langle \cos v, \sin v, u \rangle$ for $0 \leq u \leq 5$ and $0 \leq v \leq \pi$. Then compute the surface integral

$$\iint_S z \, dS =$$

2. Let S be the part of the graph (surface) $z = 1 - x^2 - y^2$ for which $z \geq 0$. Parameterize this surface. Set-up, and compute, a surface integral for its area.