Dartmouth CS87/287 Rendering Algorithms, Fall 2025
Reading Assignment 3

Calculate texture coordinates and normal for cylinder

For a point $P = \{x, y, z\}$ on a cylinder with radius r and height h,

(a) Derive its texture coordinates u, v analogous to the derivation of sphere texture coordinates in RTNW 4.4. You do not need to consider the bottom and the top of the cylinder.

(b) Compute its surface normal.

(Hint: you may use Cartesian coordinates, or the cross product of partial derivatives $\frac{\partial P}{\partial u}$ and $\frac{\partial P}{\partial v}$ of the texture coordinate parameterization.)