

## Cylindrical and Spherical Coordinates- HW Problems

1. Change from cylindrical coordinates to Cartesian coordinates.

a.  $(2, \frac{3\pi}{4}, 3)$

b.  $(3, \frac{4\pi}{3}, 1)$

2. Change from spherical coordinates to rectangular (Cartesian) coordinates.

a.  $(2, \frac{\pi}{4}, \frac{\pi}{3})$

b.  $(3, \frac{3\pi}{4}, \frac{2\pi}{3})$

3. Change from rectangular coordinates to cylindrical coordinates and spherical coordinates.

a.  $(1, -1, \sqrt{2})$

b.  $(-\sqrt{3}, 1, 2\sqrt{3})$

4. Sketch the solid given by:

a.  $0 \leq \theta \leq \pi, 0 \leq r \leq 3, 0 \leq z \leq 3.$

b.  $0 \leq \theta \leq 2\pi, 0 \leq \phi \leq \frac{\pi}{4}, 0 \leq \rho \leq 2.$