

## 15.2-3: Double Integrals, Polar Coordinates

Wednesday, March 30

### Rectangular

Find the volume of the solid with the domain  $\{(x, y, z) : x^2 + y^2 \leq 1, y \geq z, x \geq 0, z \geq 0\}$ .

### Polar

Do the previous problem again, but this time with polar coordinates!

Why is the variable substitution  $dA = r dr d\theta$  correct? Draw a picture.

Draw some domains that are well-suited for the following coordinate systems:

- Cartesian but not polar
- polar but not Cartesian
- both
- neither

Find the volume of a sphere with radius  $a$ .