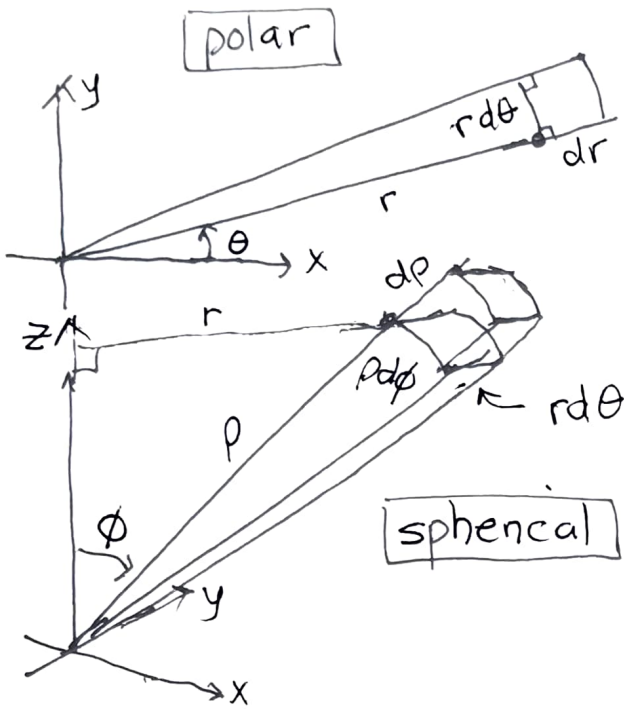
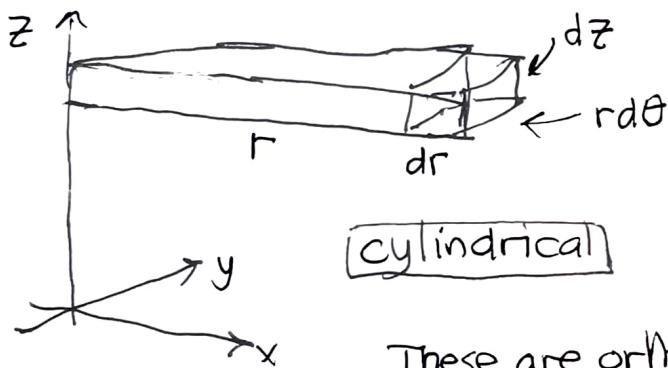
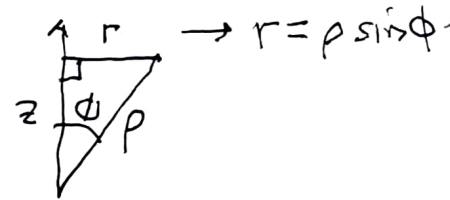


Geometric correction factors (nonrectangular coordinate grids)



$$dA = dr (r d\theta) = r dr d\theta$$

$$dV = dp (\rho d\phi) (r d\theta) = \rho^2 \sin\phi dp d\phi d\theta$$



$$dV = dr (r d\theta) dz = r dr dz d\theta$$

These are orthogonal coordinate systems where the coordinate lines (curves) intersect at right angles. In the limiting gridboxes of the Riemann integration approach, they become rectangular boxes so their "measure" is a product of the side lengths.

(see wikipedia orthogonal-coordinates for more examples.)