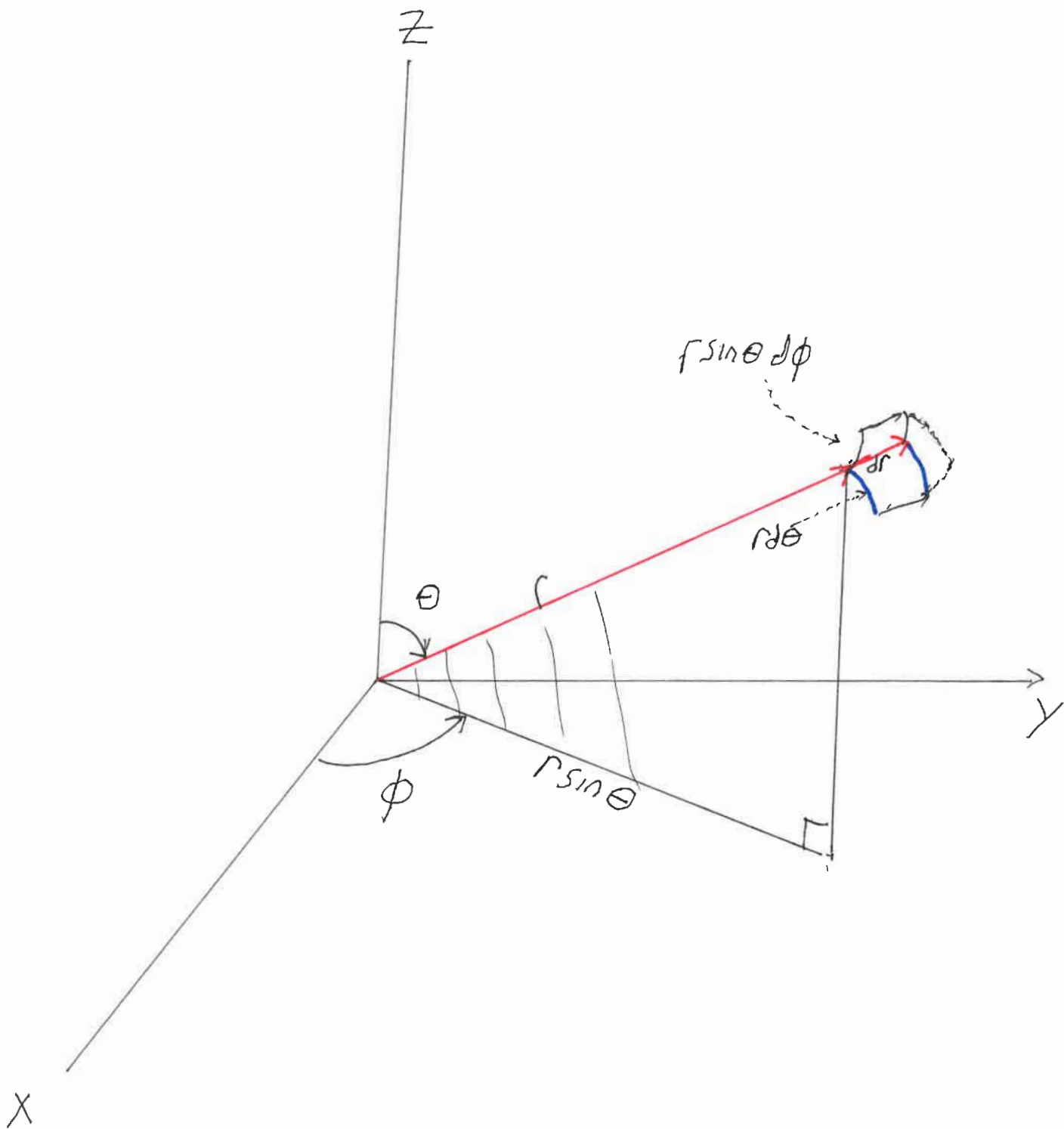




$$\text{Vol } dV = (r d\theta) dr (r \sin\theta d\phi)$$

$$= r^2 \sin\theta d\theta d\phi dr$$

integrate all $\theta, \phi \rightarrow V = r^2 dr 4\pi$
 4π solid angle in sphere.

$$\underbrace{d\Omega}_{\text{solid angle}} = \sin\theta d\theta d\phi$$

3 side areas

$$1) (r d\theta)(dr)$$

$$2) (r \sin\theta d\phi) dr$$

$$3) (r d\theta)(r \sin\theta d\phi)$$