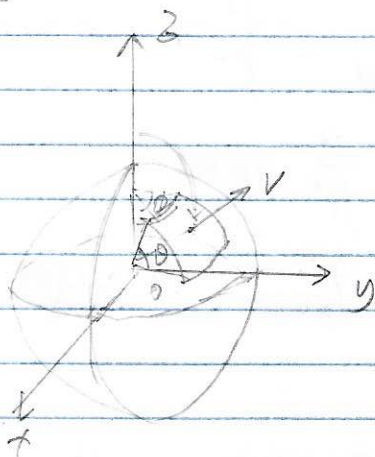


CSE 250A

HW#2 Zhisheng Huang

P4. $r=1$. $\theta = \frac{\pi}{6}$, $\phi = \frac{\pi}{6}$

$$\vec{v} = \left(\frac{\sqrt{2}}{4}, \frac{\sqrt{2}}{4}, \frac{\sqrt{3}}{2} \right)$$



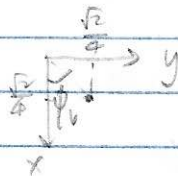
θ_v For vector \vec{v} is



$$a = \sqrt{\left(\frac{\sqrt{2}}{4}\right)^2 + \left(\frac{\sqrt{2}}{4}\right)^2} = \frac{1}{2}$$

$$\theta_v = \frac{\pi}{6}$$

ϕ_v for vector \vec{v} is



$$\phi_v = \frac{\pi}{4}$$

$$dA = r d\theta (r \sin\theta d\phi)$$

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

$$dW = \frac{dA}{r^2} = \sin\theta d\theta d\phi$$

$$W = \int_{\frac{\pi}{4}}^{\frac{\pi}{2}} \int_{\frac{\pi}{12}}^{\frac{\pi}{4}} \sin\theta d\theta d\phi$$

$$= \frac{\pi}{6} \left(-\cos\theta \Big|_{\frac{\pi}{12}}^{\frac{\pi}{4}} \right) = 0.04314 \pi \text{ sr.}$$