

① Parametrize the octant of the unit sphere $S = \{(x, y, z) \mid x, y, z \geq 0\}$ and $\rho = 1$ using spherical coordinates φ and θ as parameters. HW
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② If $\vec{N} = \langle ?, ?, + \rangle$ when $\theta = \varphi = \frac{\pi}{4}$, then find a formula for $\vec{N} dA$ in terms of $d\theta$, $d\varphi$, θ , & φ (for the surface S from ①).

③ Find the flux through S as in ① with orientation \vec{N} as in ② of the field $\vec{F} = \langle z+x, x+y, y+z \rangle$.