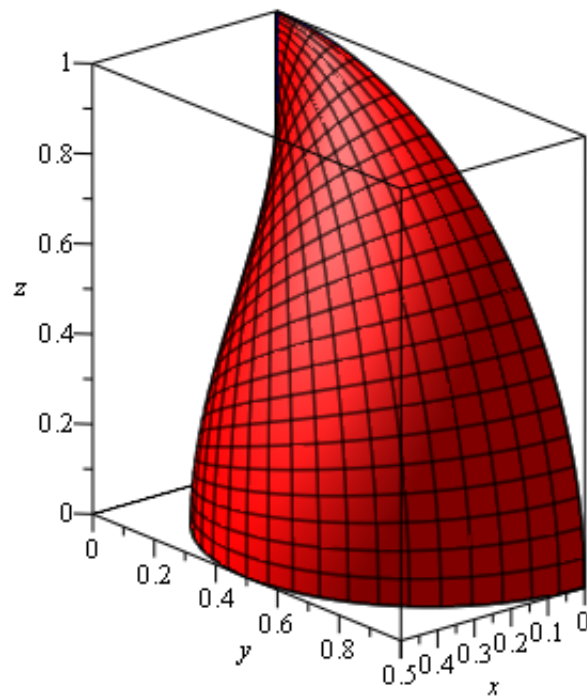


```

> with(plots) :
> Tovre := plot3d([sin(theta), theta, phi], theta = 0 .. Pi/2, phi = 0 .. Pi/2, coords = spherical, color
  = "Red") :
> Tnede := plot3d([r, theta, Pi/2], r = 0 .. sin(theta), theta = 0 .. Pi/2, coords = spherical, color
  = "Green") :
> Tside := plot3d([r, Pi/2, phi], r = 0 .. 1, phi = 0 .. Pi/2, coords = spherical, color = "Blue") :
> display(Tovre, Tnede, Tside, scaling = constrained, axes = boxed, labels = ['x','y','z'], orientation
  = [50, 70])

```



```

> with(Student[MultivariateCalculus]) :
> delta := (r, phi, theta) -> cos(theta) :
> m := MultiInt(delta(r, phi, theta), r = 0 .. sin(theta), phi = 0 .. Pi/2, theta = 0 .. Pi/2, coordinates
  = spherical[r, phi, theta], output = steps)

```

$$\begin{aligned}
& \int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \int_0^{\sin(\theta)} \cos(\theta) r^2 \sin(\phi) \, dr \, d\phi \, d\theta \\
&= \int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \left(\frac{\cos(\theta) r^3 \sin(\phi)}{3} \Big|_{r=0}^{\sin(\theta)} \right) d\phi \, d\theta \\
&= \int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \frac{\cos(\theta) \sin(\phi) \sin(\theta)^3}{3} \, d\phi \, d\theta \\
&= \int_0^{\frac{\pi}{2}} \left(-\frac{\cos(\theta) \cos(\phi) \sin(\theta)^3}{3} \Big|_{\phi=0}^{\frac{\pi}{2}} \right) d\theta \\
&= \int_0^{\frac{\pi}{2}} \frac{\cos(\theta) \sin(\theta)^3}{3} \, d\theta \\
&= \frac{\sin(\theta)^4}{12} \Big|_{\theta=0}^{\frac{\pi}{2}} \\
& \quad m := \frac{1}{12}
\end{aligned}$$

(1)

> $Mxy := \text{MultiInt}\left(r \cdot \cos(\text{phi}) \cdot \text{delta}(r, \text{phi}, \text{theta}), r = 0 .. \sin(\text{theta}), \text{phi} = 0 .. \frac{\text{Pi}}{2}, \text{theta} = 0 .. \frac{\text{Pi}}{2}, \right.$
coordinates = spherical[r, phi, theta], *output = steps*)

$$\begin{aligned}
& \int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \int_0^{\sin(\theta)} r^3 \cos(\phi) \cos(\theta) \sin(\phi) \, dr \, d\phi \, d\theta \\
&= \int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \left(\frac{r^4 \cos(\phi) \cos(\theta) \sin(\phi)}{4} \Big|_{r=0}^{\sin(\theta)} \right) d\phi \, d\theta \\
&= \int_0^{\frac{\pi}{2}} \int_0^{\frac{\pi}{2}} \frac{\cos(\phi) \cos(\theta) \sin(\phi) \sin(\theta)^4}{4} \, d\phi \, d\theta \\
&= \int_0^{\frac{\pi}{2}} \left(-\frac{\cos(\phi)^2 \cos(\theta) \sin(\theta)^4}{8} \Big|_{\phi=0}^{\frac{\pi}{2}} \right) d\theta \\
&= \int_0^{\frac{\pi}{2}} \frac{\cos(\theta) \sin(\theta)^4}{8} \, d\theta \\
&= \frac{\sin(\theta)^5}{40} \Big|_{\theta=0}^{\frac{\pi}{2}}
\end{aligned}$$

$$M_{xy} := \frac{1}{40} \quad (2)$$

$$\text{> } zStrek := \frac{M_{xy}}{m}$$

$$zStrek := \frac{3}{10} \quad (3)$$