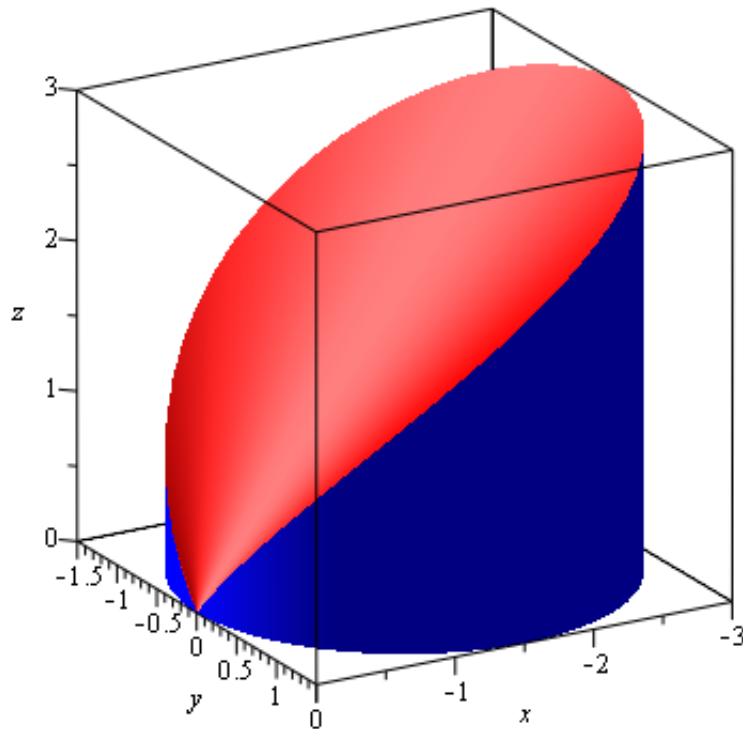


```

> with(plots) :
> Toppe := plot3d([r, theta, r], r = 0 .. -3*cos(theta), theta = Pi/2 .. 3*Pi/2, coords = cylindrical,
  color = "Red", style = patchnograd) :
> Tnede := plot3d([r, theta, 0], r = 0 .. -3*cos(theta), theta = Pi/2 .. 3*Pi/2, coords = cylindrical,
  color = "Green", style = patchnograd) :
> Tside := plot3d([-3*cos(theta), theta, z], theta = Pi/2 .. 3*Pi/2, z = 0 .. -3*cos(theta), coords
  = cylindrical, color = "Blue", style = patchnograd) :
> display(Toppe, Tnede, Tside, scaling = constrained, axes = boxed, labels = ['x','y','z'], orientation
  = [60, 70])

```



```

> with(Student[MultivariateCalculus]) :
> MultiInt(1, z = 0 .. r, r = 0 .. -3*cos(theta), theta = Pi/2 .. 3*Pi/2, coordinates = cylindrical[r, theta,

```

$z]$ ,  $output = steps$ )

$$\int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} \int_0^{-3\cos(\theta)} \int_0^r r \, dz \, dr \, d\theta$$

$$= \int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} \int_0^{-3\cos(\theta)} \left( r z \Big|_{z=0}^{z=r} \right) dr \, d\theta$$

$$= \int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} \int_0^{-3\cos(\theta)} r^2 \, dr \, d\theta$$

$$= \int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} \left( \frac{r^3}{3} \Big|_{r=0}^{r=-3\cos(\theta)} \right) d\theta$$

$$= \int_{\frac{\pi}{2}}^{\frac{3\pi}{2}} -9 \cos^3(\theta) \, d\theta$$

$$= \left( -3 \cos^2(\theta) \sin(\theta) - 6 \sin(\theta) \right) \Big|_{\theta = \frac{\pi}{2}}^{\theta = \frac{3\pi}{2}}$$