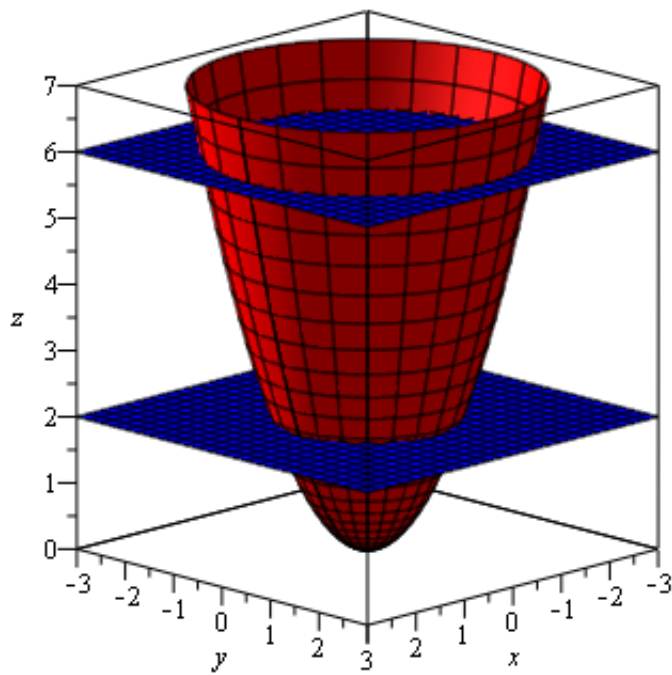


```

> with(plots) :
> Paraboloid := plot3d([r, theta, r^2], r = 0 .. sqrt(7), theta = 0 .. 2·Pi, coords = cylindrical, color
= "Red") :
> Plan1 := plot3d([x, y, 2], x = -3 .. 3, y = -3 .. 3, color = "Blue") :
> Plan2 := plot3d([x, y, 6], x = -3 .. 3, y = -3 .. 3, color = "Blue") :
> display(Paraboloid, Plan1, Plan2, scaling = constrained, axes = boxed, labels = [x, y, z],
orientation = [45, 75]);

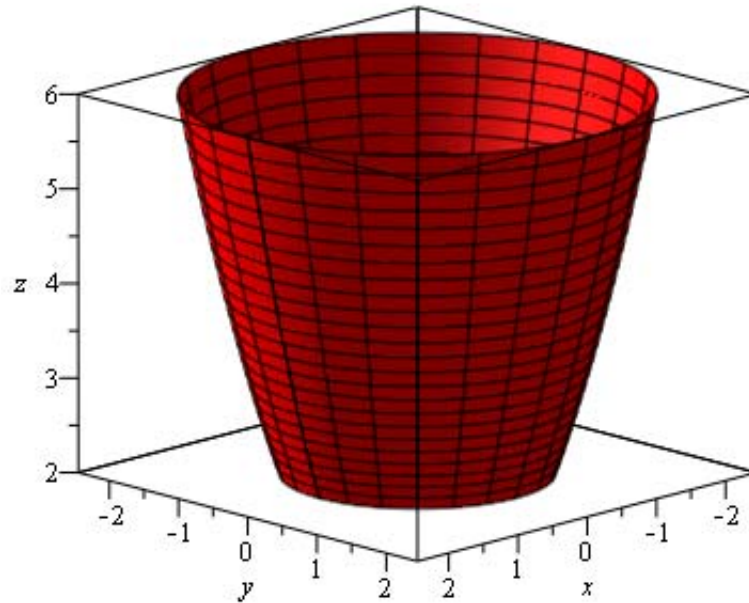
```



```

> plot3d([r, theta, r^2], r = sqrt(2) .. sqrt(6), theta = 0 .. 2·Pi, coords = cylindrical, color = "Red",
scaling = constrained, axes = boxed, labels = [x, y, z], orientation = [45, 75]);

```



```
> with(Student[VectorCalculus]) :
```

```
> SurfaceInt(1, [x, y, z] = Surface(⟨r·cos(theta), r·sin(theta), r²⟩, r = sqrt(2) ..sqrt(6), theta = 0 ..2·Pi));
```

$$\frac{49}{3} \pi$$

(1)

```
> with(Student[MultivariateCalculus]) :
```

```
> MultiInt(r·sqrt(1 + 4·r²), r = sqrt(2) ..sqrt(6), theta = 0 ..2·Pi, output = steps);
```

$$\int_0^{2\pi} \int_{\sqrt{2}}^{\sqrt{6}} r \sqrt{1+4r^2} \, dr \, d\theta$$

$$= \int_0^{2\pi} \left(\left. \frac{(1+4r^2)^{3/2}}{12} \right|_{r=\sqrt{2}}^{\sqrt{6}} \right) d\theta$$

$$= \int_0^{2\pi} \frac{49}{6} \, d\theta$$

$$= \left. \frac{49\theta}{6} \right|_{\theta=0}^{2\pi}$$

$$\frac{49}{3} \pi$$

(2)