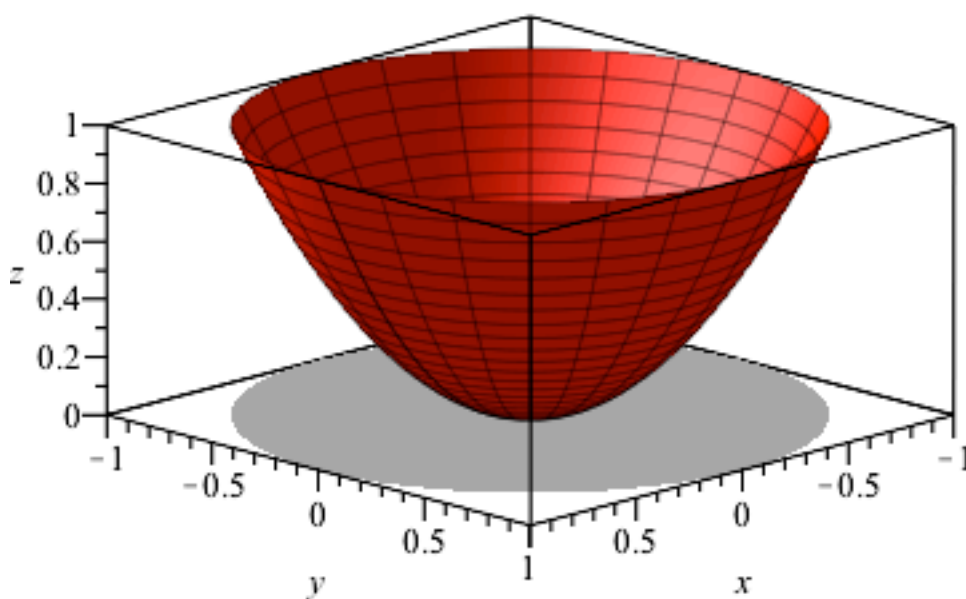


```

> with(plots) :
> Cylinder := plot3d([r, theta, r^2], r = 0..1, theta = 0..2·Pi, coords = cylindrical, color = "Red") :
> Skygge := plot3d([r, theta, 0], r = 0..1, theta = 0..2·Pi, coords = cylindrical, color = "Gray",
  style = patchnogrid) :
> display(Cylinder, Skygge, scaling = constrained, axes = boxed, labels = [x, y, z], orientation
  = [45, 75]);

```



```

> g := (x, y, z) → x^2 + y^2 - z :
> with(Student[VectorCalculus]) :
> F := (x, y, z) → VectorField(⟨4·x, 4·y, 2⟩) :
> F(x, y, z).Del(g(x, y, z));

```

$$-2 + 8x^2 + 8y^2$$

(1)

```

> with(Student[MultivariateCalculus]) :
> MultiInt(8·r^2 - 2, r = 0..1, theta = 0..2·Pi, coordinates = polar[r, theta], output = steps);

```

$$\int_0^{2\pi} \int_0^1 (-2 + 8r^2) r \, dr \, d\theta$$

$$= \int_0^{2\pi} \left((2r^4 - r^2) \Big|_{r=0..1} \right) d\theta$$

$$= \int_0^{2\pi} 1 \, d\theta$$

$$= \theta \Big|_{\theta=0..2\pi}$$

$$2\pi$$

(2)

