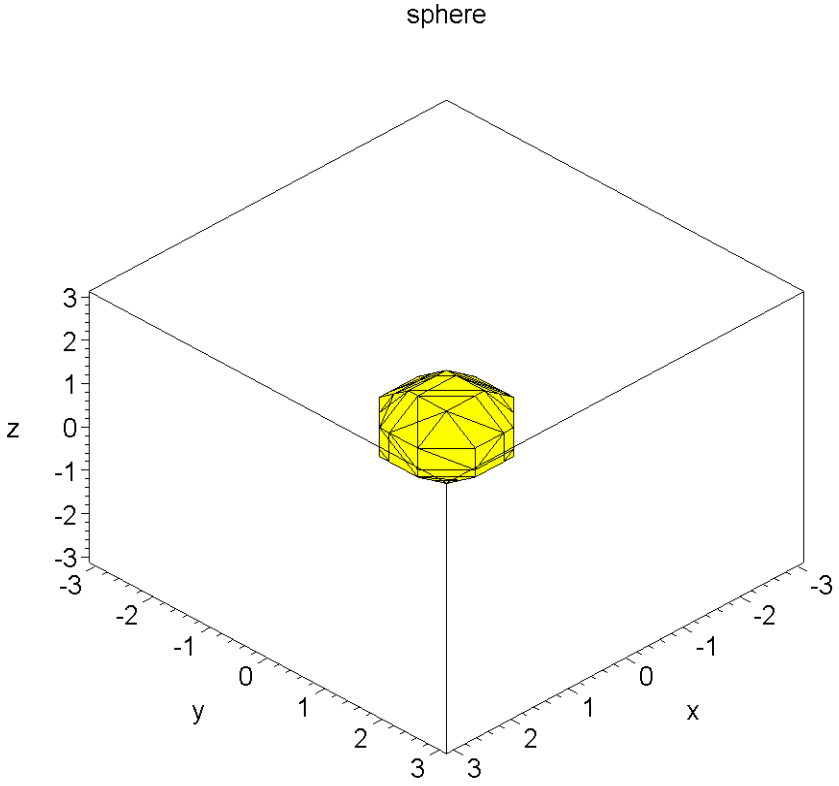
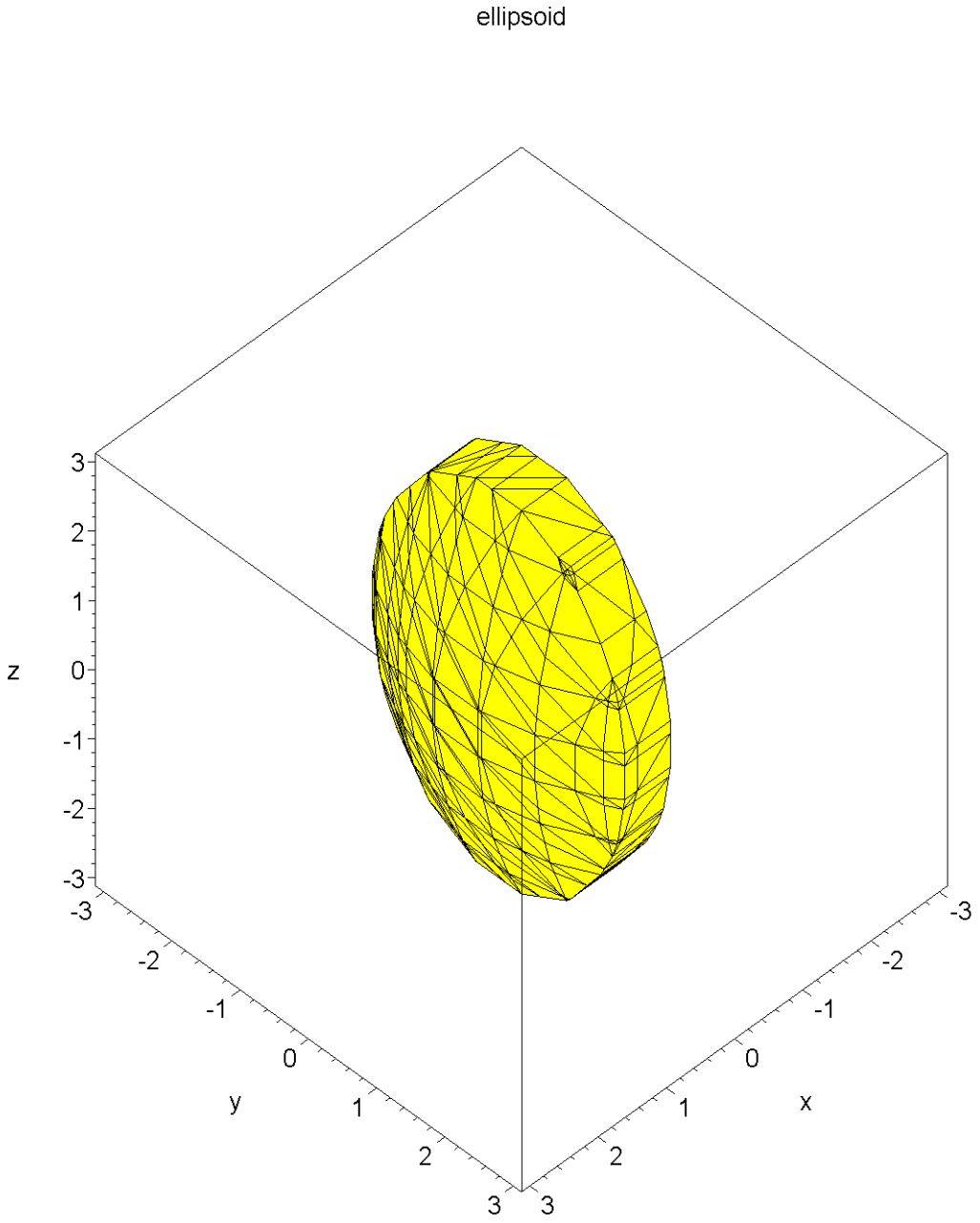
```
> restart:with(plots):
  with(student):with(linalg):Digits := 4:
```

```
Warning, the name changecoords has been redefined

Warning, the protected names norm and trace have been redefined and unprotected
```

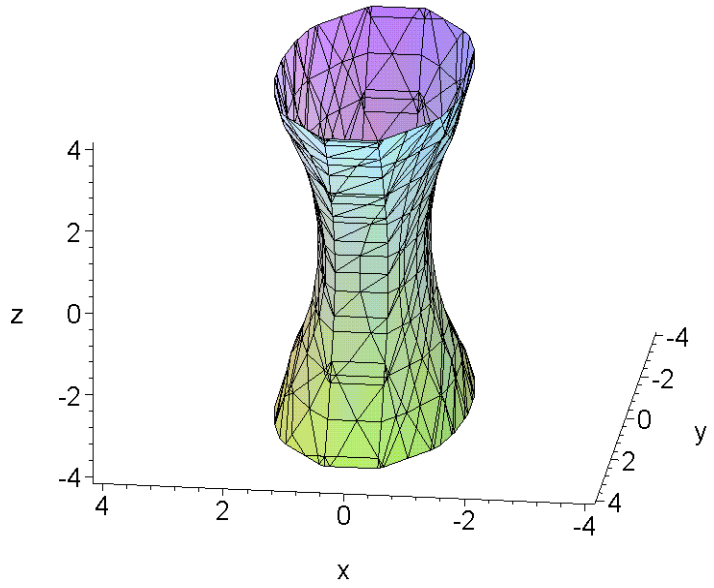
```
> a:=1:b:=2:c:=3:
> implicitplot3d(x^2/a^2+ y^2/a^2+z^2/a^2=1, x = -3..3, y = -3 .. 3,
  z= -3 .. 3, color=yellow,axes= boxed,title="sphere");
> implicitplot3d(x^2/a^2+ y^2/b^2+z^2/c^2=1, x = -3..3, y = -3 .. 3,
  z= -3 .. 3, color=yellow,axes= boxed,title="ellipsoid");
```





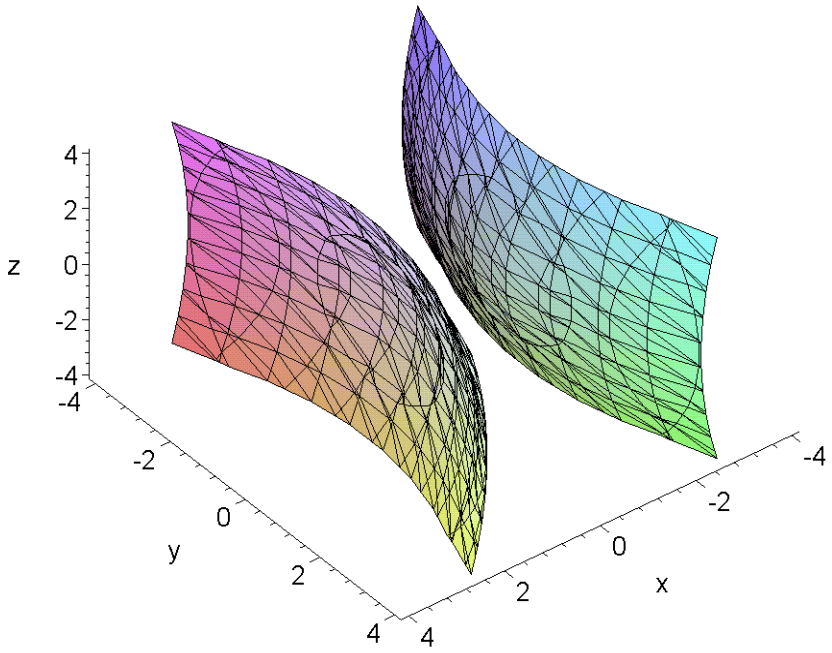

```
> implicitplot3d(x^2/a^2 +y^2/b^2- z^2/c^2= 1,x=-4..4,y=-4..4, z= -4
  .. 4, axes=frame,title="hyperboloid of 1 sheet");
```

hyperboloid of 1 sheet



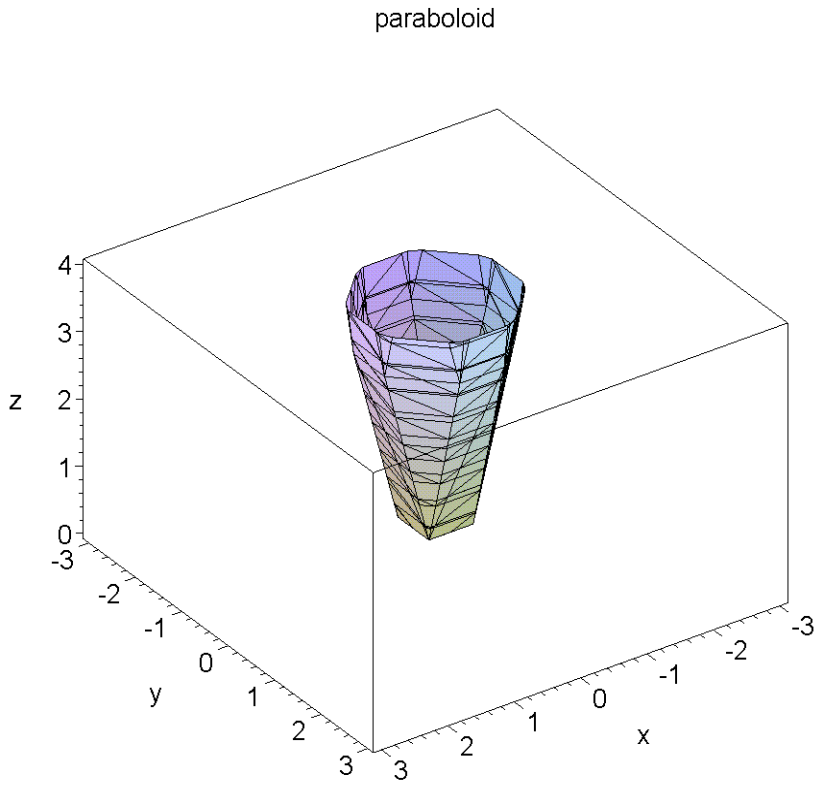

```
> implicitplot3d(x^2/a^2 -y^2/b^2- z^2/c^2= 1,x=-4..4,y=-4..4, z= -4
  .. 4, axes=frame,title="hyperboloid of 2 sheets");
```

hyperboloid of 2 sheets



2.

```
> implicitplot3d(x^2 +y^2 =z/c,x=-3..3,y=-3..3, z= 0 .. 4,
  axes=boxed,title="paraboloid");
>
```

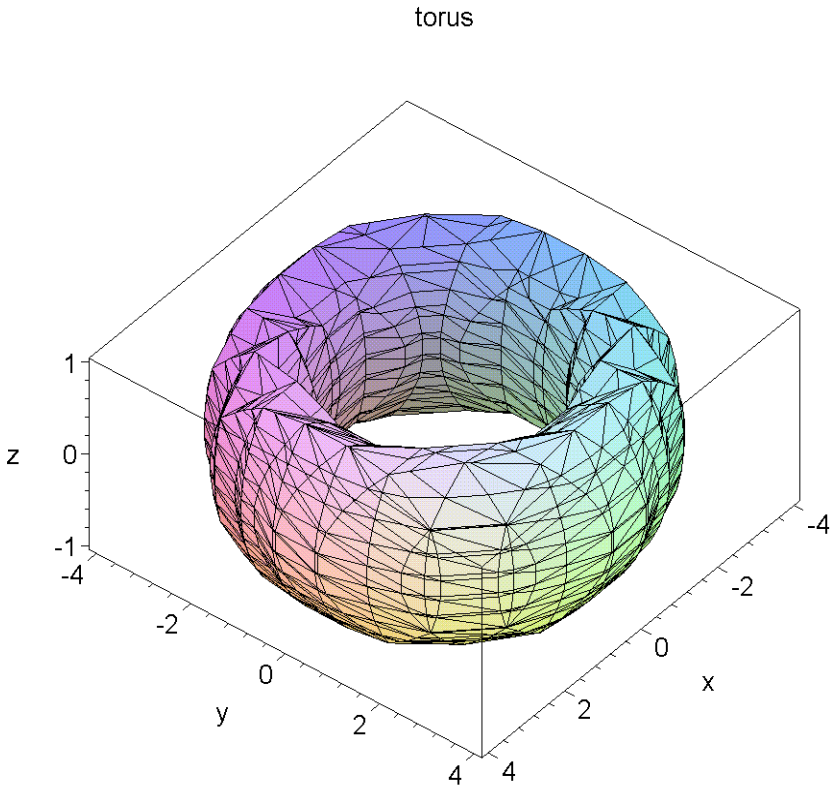


I

```
> g:= (x,y,z) -> ( sqrt(x^2+y^2)-3)^2+z^2 =1;
```

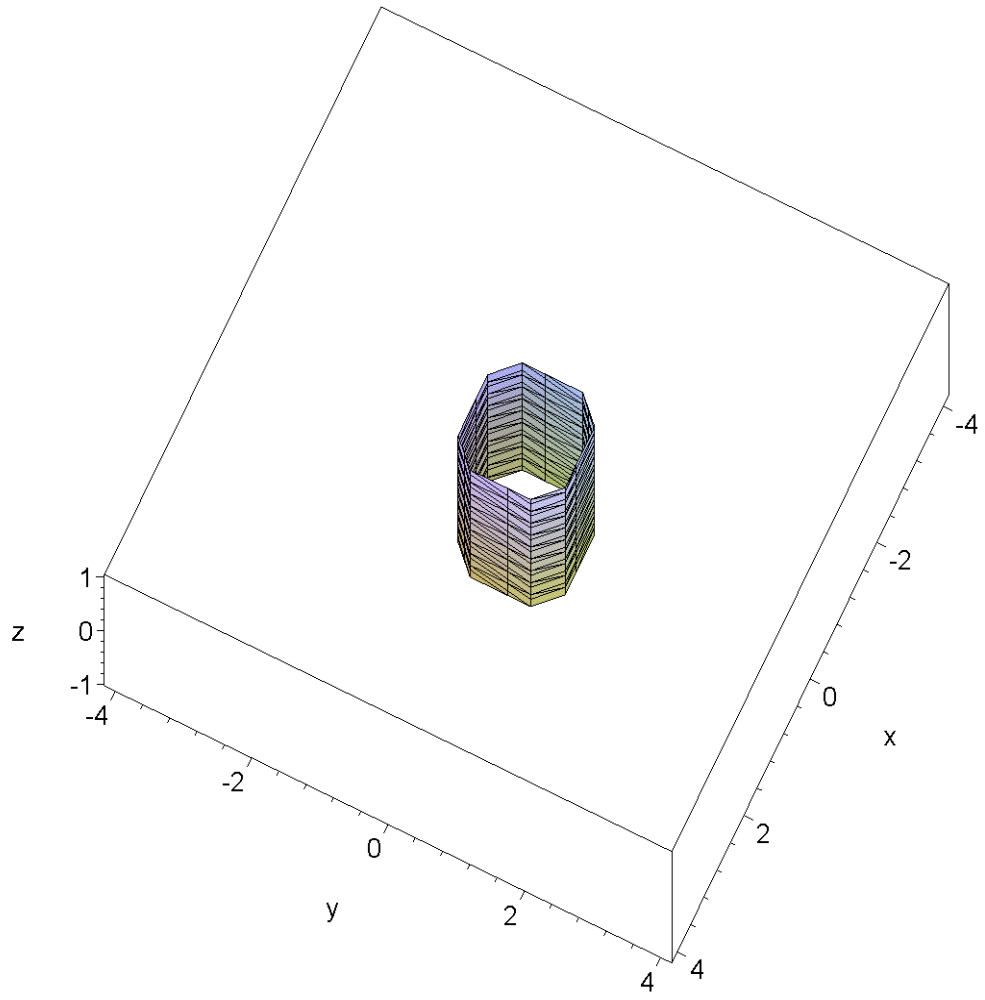
$$g := (x, y, z) \to (\sqrt{x^2 + y^2} - 3)^2 + z^2 = 1$$

```
> implicitplot3d( ((sqrt(x^2+y^2)-3)^2 + z^2 =1), x = -4 .. 4, y =
  -4 .. 4, z = -1  .. 1, axes=boxed,title="torus");
```




```
> implicitplot3d( (x^2+y^2 =1), x = -4 .. 4, y = -4 .. 4, z = -1  ..
  1, axes=boxed,title="cylinder");
```

cylinder



> v

> v