

Code 04 - 3D Scene

Example 01

```
from manim import *

class Myscene(ThreeDScene):

    def construct(self):

        axes = ThreeDAxes()
        axes.add_coordinates()

        # phi = 0, theta = -90
        self.play(Create(axes), run_time=5)
        self.move_camera(phi = 45*DEGREES,
            theta= -45*DEGREES,
            run_time = 3,
            )

        self.begin_ambient_camera_rotation(
            rate = 15 * DEGREES,
            about= "theta"
        )
        self.wait(5)
        self.stop_ambient_camera_rotation()

        self.move_camera(phi = 60*DEGREES,
            theta = -45*DEGREES,
            run_time = 3,
            )
        self.wait(2)

        self.move_camera(zoom=0.8)
        self.wait(5)
```

Example 02

```
from manim import *
import numpy as np
from sympy import plot_parametric

class Myscene(ThreeDScene):

    def construct(self):

        axes = ThreeDAxes()
        axes.add_coordinates()

        surface1 = Surface(lambda u, v: axes.c2p(*(np.array([u, v, u**2/5 + v**2/5]))),
            resolution=5,
            u_range=[-3,3],
            v_range=[-3,3],
            )

        parametric1 = axes.plot_parametric_curve(lambda t: np.array([np.cos(t), np.sin(t), t]),
            color = RED,
            t_range = [-2*PI, 2*PI],
            )

        parametric2 = ParametricFunction(lambda t: axes.c2p(*(np.array([np.cos(t), np.sin(t), t]))),
            color = YELLOW,
            t_range=[-2*PI, 2*PI],
            )

        self.move_camera(phi = 45*DEGREES, theta= -45*DEGREES)
        self.play(Create(axes), run_time=2)
        self.play(Create(surface1), run_time=2)
        self.wait(5)
        self.play(FadeOut(surface1))

        self.play(Create(parametric1), run_time=2)

        self.play(Create(parametric2), run_time=2)
        self.wait(5)
```