

Submit your Jupyter notebook with the answers to gradescope by 3:40pm.

1. The curve defined by $(x, y, z) = (\cos(t), \sin(t), t)$ satisfies $x^2 + y^2 = 1$.

Plot the cylinder in blue and the curve in red on the same plot,
for t and z both in $[0, 2\pi]$, x and y both in $[-1, +1]$.

Render the curve sufficiently thick to notice the curve.

2. Define a matrix $C = \begin{bmatrix} c_0 & c_3 & c_2 & c_1 \\ c_1 & c_0 & c_3 & c_2 \\ c_2 & c_1 & c_0 & c_3 \\ c_3 & c_2 & c_1 & c_0 \end{bmatrix}$, for variables c_0, c_1, c_2, c_3 .

For an n -dimensional matrix C , the (i, j) -th element is c_k ,
with index $k = n - j + i \bmod n$.

Do not type in the matrix C , but work with the general definition
and demonstrate that your definition works for 8 variables.