Virtual and Augmented Reality Fall 2023
Assignment 1: Camera View Transformation

Problem 1:
To start, the camera's local coordinate system coincides with the world coordinate system. The camera then undergoes a rotation of 130 degrees around the z axis, followed by a translation of (dx, dy, dz) = (2.0, 3.0, 1.0) and another rotation of 20 degrees around the x axis.

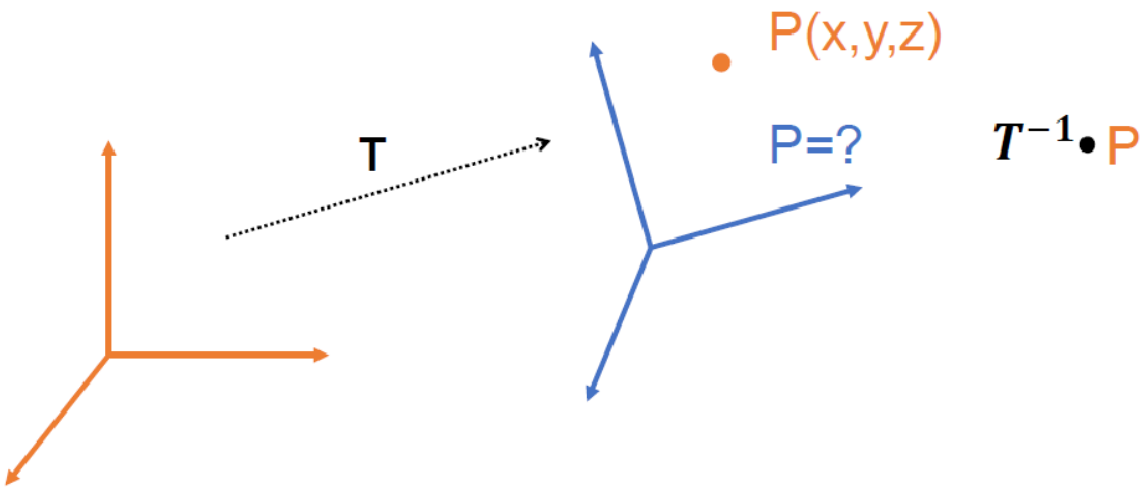
Your task is to:

1) Compute the 4 x 4 matrix corresponding to each transformation described above and composite them into a single transformation matrix, i.e., the camera transformation matrix (5 pts)

2) Given an object of position (2.0, 3.0, 4.0) in the world space, compute its coordinates in the camera space (5 pts)

3) Visualize the object's position in the world space and the camera space. (5 pts)

Here is a general visual representation of the problem, to get you started.



Submission Guidelines:

1) Make your own copy of the starter Python code in the Google Colab file HERE to work with
2) Submit to Brightspace for grading: your code, and a pdf with your computed 3D coordinates (i.e., 3 scalar values) of the given object in the camera space and the visualization results