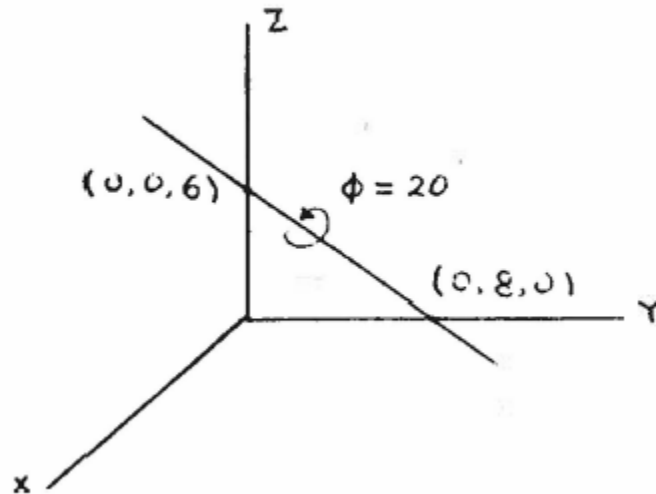


1. In an industrial application a part is to turn 20 degrees about a rod shown below (in the direction indicated) and move down six inches along the same rod.
 - a. Please determine a single 4x4 matrix transformation that can be used to compute the new coordinates of an arbitrary point on the part.
 - b. Using the results of part a, please determine the new world coordinates of a point whose original coordinates were X,Y, and Z.



2. Complete the derivation of the Denavit-Hartenberg (D-H) Transformation from what was done in the classroom using the joint and Shape matrices based on the diagram and the derivation started in the class on 2-1-2018.
3. Consider the robot manipulator shown below.
 - a. Determine the D-H parameters for the robot and the D-H transformation for each joint.
 - b. Derive the kinematic equations for coordinates of a point at the tip of the last link (XYZ0 in terms of the joint variables.
 - c. Determine the inverse kinematic solution.

