Exercise 5.1

Consider the robot manipulator from Lecture 4.

1. Compute and draw the dynamic manipulability ellipsoid for the robot at the configuration $\boldsymbol{q} = (\theta_1, \theta_2, \theta_3) = (\pi/2, \pi/3, \pi/3)$.
2. Setup a simulation of the robot model in Simulink and add an external force at the end of the robot. Simulate the robot, where it is position controlled, and read the joint torques, when holding the robot in configuration $\boldsymbol{q} = (\theta_1, \theta_2, \tau_3) = (1, \pi/3, \pi/3)$ (This will verify one of the results from the last lecture).