National Yang Ming Chiao Tung University
Department of Electrical Engineering

Robotics: Homework 3
Due 11/17/22 Fall 2022

1. For the PUMA 560 robot manipulator, please (a) find its Jacobian and inverse Jacobian solutions using the method in *Robot Manipulators* by R. Paul, MIT Press 1981, (b) derive the Jacobian matrix by using the wrist coordinate frame as the reference instead of using the base coordinate frame, and (c) solve the Jacobian matrix derived in (b) by using the method in "An Efficient Solution of Differential Inverse Kinematics Problem for Wrist-Partitioned Robots," C.H. Wu and K.Y. Young, *IEEE Trans. on Robotics and Automation*, Vol. 6(1), pp. 117-123, 1990, and also discuss the singular conditions .