

ME 115(a): Homework #6

(Due Wednesday March. 9, 2004)

Problem #1:

part (a): For Manipulator (iv) in Figure 3.23, solve the inverse kinematic problem, where the goal is to place the origin of the tool frame at a desired position.

Part (b): For Manipulator (iii) in Figure 3.24 (i.e., the “Stanford manipulator”), solve the inverse kinematics problem. That is, given a desired position and orientation of the tool frame, find the joint variables that place that manipulator tool frame at that location. Note that the “regional” part of this manipulator (the part of the linkage preceding the wrist) is exactly the same as part (a).

Problem #2: Find the singularities of the manipulator in Problem 1(b).

Problem #3 : Do problem 14(a) in Chapter 3 of MLS.