MeEn 537 Homework #5

1. Work the following problems from your textbook:
   (a) 7-3
   (b) 7-5 (Look at the definition of a positive definite matrix on wikipedia if needed. The form of Kinetic energy for a n-link robot may help you here.)
   (c) 7-7
   (d) 7-10 (assuming that each link of the robot is of length 0.4m)
2. For each of the following use the Robotics toolbox and its model of Baxter:
   (a) Given the file "torque_profile.mat" calculate the $\ddot{q}, \dot{q}, q$ that would result from that torque applied to Baxter. Turn in plots of these for each joint (using subplots and grouping position, velocity and acceleration is likely the cleanest way to do this).
   (b) Given the file "desired_accel.mat" calculate the joint torques τ necessary to cause this acceleration. Turn in plots of the joint torques for each joint.