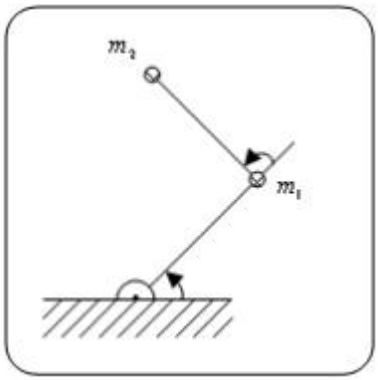
MMC Homework 7

The current configuration of a Two link manipulator is given below as you can see the class material for chap. 6.

mass parameter $m_1 = 5\text{kg}$, $m_2 = 5\text{kg}$, $l_1 = l_2 = 0.5m$



$$\theta_1(0) = 30^\circ \quad \theta_1(t_f) = 150^\circ \qquad t_f = 2\,\text{sec}$$
$$\dot{\theta}_1(0) = 0 \quad \dot{\theta}_1(t_f) = 0$$
$$\theta_2(0) = 120^\circ \quad \theta_2(t_f) = 30^\circ$$
$$\dot{\theta}_2(0) = 0 \quad \dot{\theta}_2(t_f) = 0$$

Use trajectory planning with a linear functions with parabolic blends for the two joints of the manipulator as done in HW6

1) perform PD control simulation.(Simulink is also accepted)
2) perform PD+ gravity control simulation.
3) perform computed torque control simulation.
4) compare errors of 3 cases above.