In this exercise you will implement model-based control on the five bar linkage robot arm. Implement the joint space and operational space forms of the computed torque method and make your robot draw a **Hypotrochoid**. Also implement these controllers in simulation using Autolev, so that you can compare the simulation results with the actual result of implementing the controller.

Write up this lab as a homework problem, but only type up your position and orientation portion. Include the Autolev code to show the rest of the write-up beyond the position and orientation. Make sure to include:

1. **(200pts)** Position and Orientation.
2. **(100pts)** A **Mass Properties** section where you clearly discussion of how you translated the mass properties from Solidworks into your model. (This will be the only other section in the write-up not included in the Autolev code.)
3. **(50pts)** In the **Solution** section, give a discussion of how you generated your trajectories for the figure eight for the joint space and operational space controllers.
4. **(100pts)** In the **Solution** section, include a listing of the input file to Autolev for both controllers. **Do not include a listing of the .all file.**
5. **(20pts)** In the **Solution** section, include a motion capture plot of the animation of the figure eight for both controllers.
6. **(50pts)** In the **Solution** section, include a digital scan of the actual figure eight drawn by your mechanism using each controller.
7. **(20pts)** In the **Solution** section, give a brief discussion of the comparison between the theoretical prediction and the experimental motion for both controllers.
8. **(20pts)** In the **Solution** section, include a picture of your team next to your device.
9. **(50pts)** Demonstration of joint space.
10. **(75pts)** Demonstration of operational space.