

AME 339 - Kinematics and Dynamics of Machinery
Lecture 3 Homework

Problem 1: (10 pts)

In the four bar mechanism shown in Figure 1, link 3 is the input and link 1 is the output. Determine if this system is a rocker-rocker, rocker-crank, crank-crank or crank-rocker.

Problem 2: (10 pts)

Continuing with Problem 1, graphically determine all of the following that are applicable.

- What are the maximum and minimum transmission angles?
- What are the dead positions?
- What is the time ratio?

Do each graphical construction on a separate piece of paper (one side only). (You may print extra copies of the figure from the website.)

Problem 3: (10 pts)

Determine the configuration of the system in Figure 1 when the angle θ_3 is equal to 63° .

Problem 4: (10 pts)

Draw the kinematic inversion of the system in Figure 1 which has link 1 as the ground link (i.e. frame link) and repeat Problem 1. Take link 4 to be the input and link 2 to be the output.

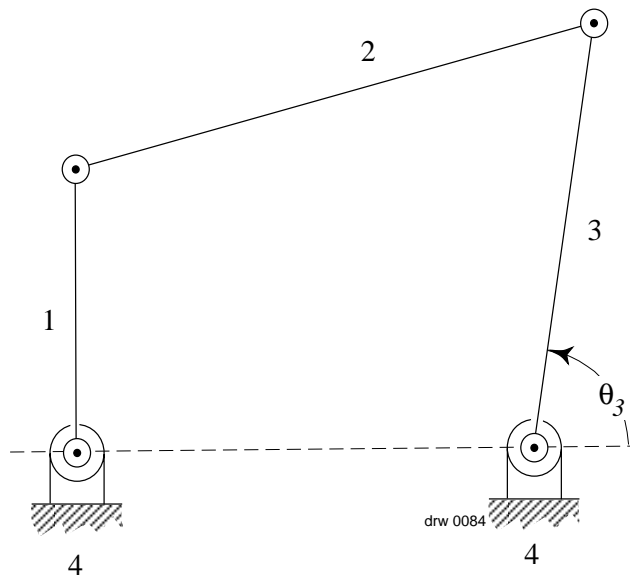
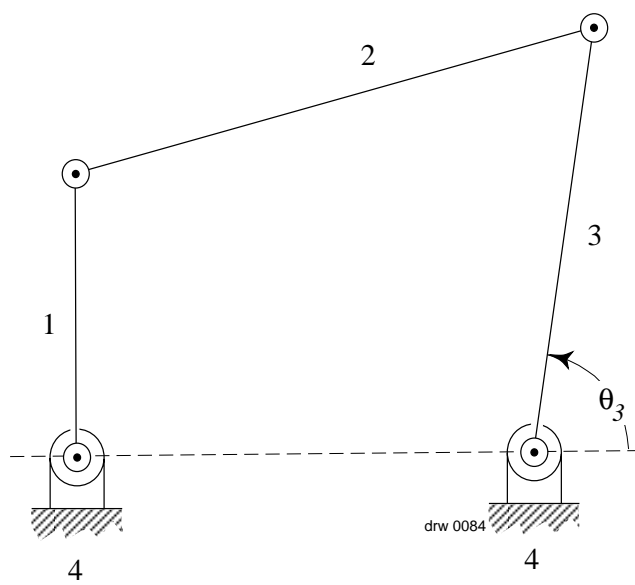


Figure 1: A Four Bar Mechanism



Problem 5: (20 pts)

Determine the F and M number for each of the following mechanisms. Justify any difference in the values of F and M .

