

Question 1 (25 points)

For the specifications shown below, synthesize a mechanism to trace the elliptical path when the force is applied at a point on the input crank. This means that the input force and the rotation of the input crank are specified along with the corresponding point on the output path. And then, the compliant mechanism is to be created using the pseudo rigid-body approach.

- Write the loop-closure equations and force-equilibrium equations.
- Create a table of numbers of variables, equations, and free choices for different number of precision points.
- Choose suitable number of precision points to be able to solve for the unknowns using linear equations as much as possible.
- Solve the equations and obtain a rigid-body linkage and the rotation spring constant.
- Convert the rigid-body linkage to a compliant mechanism.

