CE 546/ME 549 – Finite element analysis
Exam 1, Take home
Assigned: Monday, March 9, 2020
Due: Thursday, March 12, 2020, 11:00 pm PST.
(maximum 40 points)

(40 pts.) The truss shown below is pinned at point A and it has a roller at point D. A force P = 1000 N is applied at each of the points E and F. Using the finite element method, determine the displacements at each node in the truss, the stress in each element and the force in each element. Specify which node(s) has the largest displacement magnitude and its value. State if the elements are in tension or compression. Consider that L = 1 m, and all elements have the same cross-sectional area of $A = 10^{-2}$ m^2 and Young's modulus E = 100 GPa.

Use the numbering of the nodes and elements given below. When submitting the report, email your report as a pdf or Word document. Include the input file (if any) and the output from the finite element simulation. Also email your finite element code along with the report, and any additional files that are used to run the code.