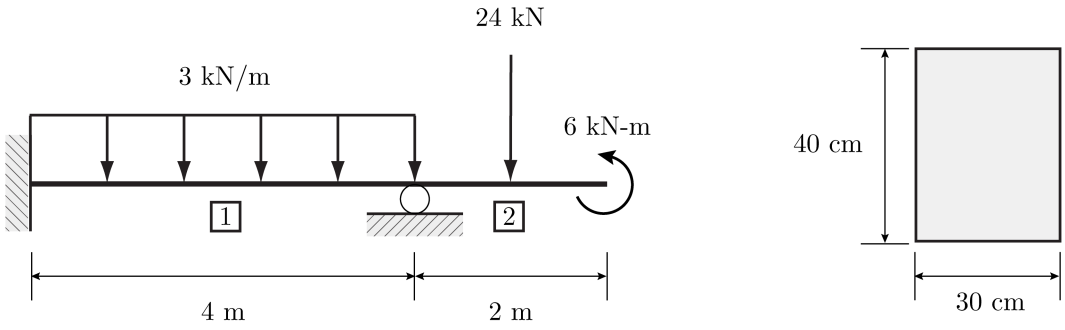
CE 525 Fall 2024 HW#3

Due Monday, October 14, by 9:00am ET

1. For the beam shown below determine joint displacements/rotations, support reactions, and shear force / bending moment diagrams using the Matrix Displacement Method:



E = 20 GPa; G = 7.5 GPa for all members

a. (10 pts) By hand & programming using Bernoulli-Euler Beam Theory (BEBT)

b. (5 pts) Using SAP2000 (neglecting shear deformation)

c. (10 pts) By hand & programming using Timoshenko Beam Theory

d. (5 pts) Using SAP2000 (including shear deformation)

e. (5 pts) Compare/comment on the results in a,b with c,d