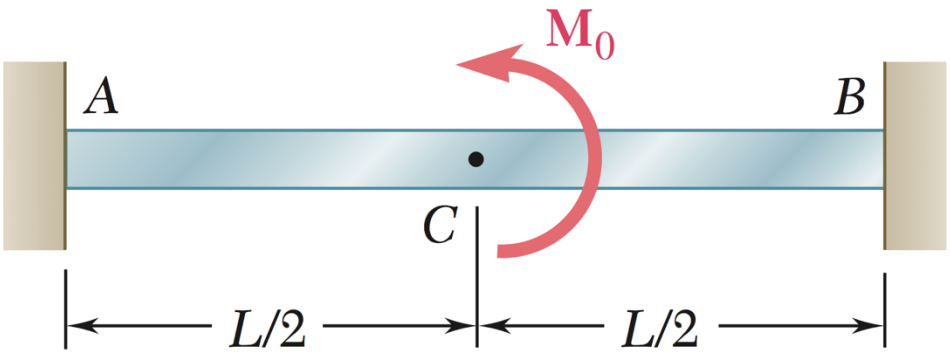
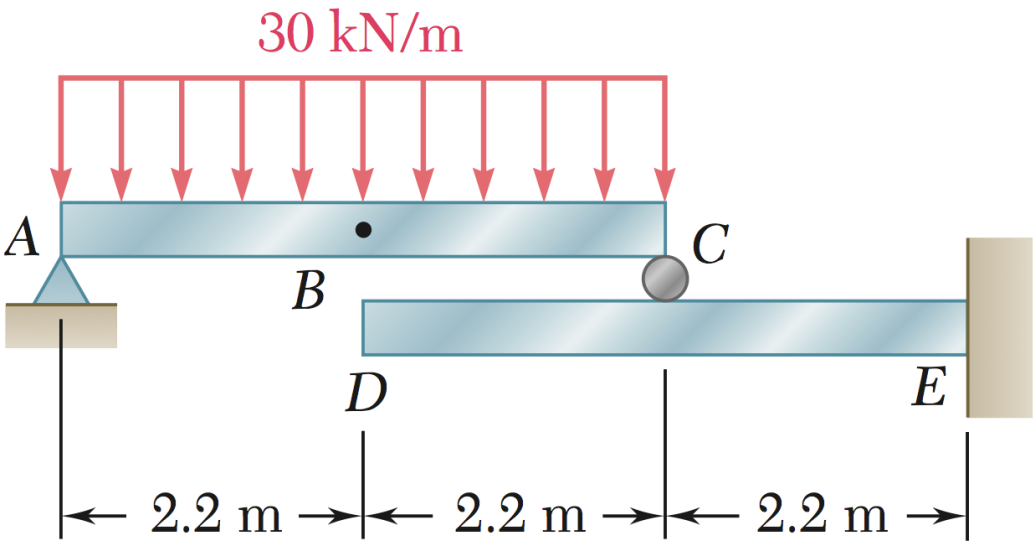
ME 202 In-Class Problem Set 16 Feb 2023

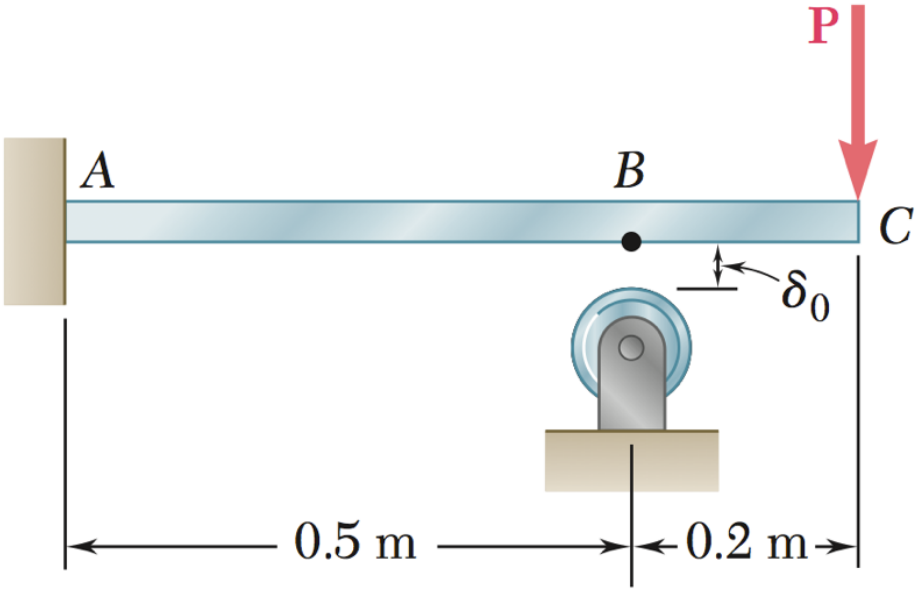
1. Find the force and moment reactions at B.



2. Beam AC rests on the cantilever beam DE through a rigid roller at C. Find the vertical deflections of the points B, C, and D. Use E = 200 GPa and I = 2 x 10^-6 m^4.



3. The cross-section of the steel cantilever AC is 60 mm x 60 mm. Before the load P is applied, a gap d0 = 0.5 mm exists between the cantilever and the rigid roller at B. Find magnitude of P required to just close the gap. Find the magnitude of P for which the deflection at C is 1 mm.



4. A beam ABC is fixed at end A and supported at point B. Beam DE is simply supported. Both beams have the same cross-section and the same material. Determine all indicated reactions due to the applied force P. Also calculate the maximum bending moment in each beam.