

Birzeit University
Faculty of Engineering
Department of Civil and Environmental Engineering

ENCE 3331, Structural Analysis I

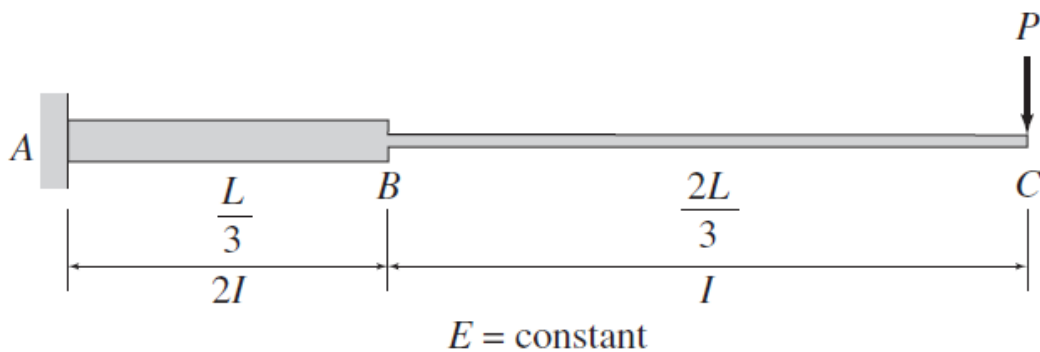
Homework assignment #6

Due on Tuesday, April 28th, 2020 @ 8:30 AM.

Question 1: Using Virtual work method, Answer the following questions

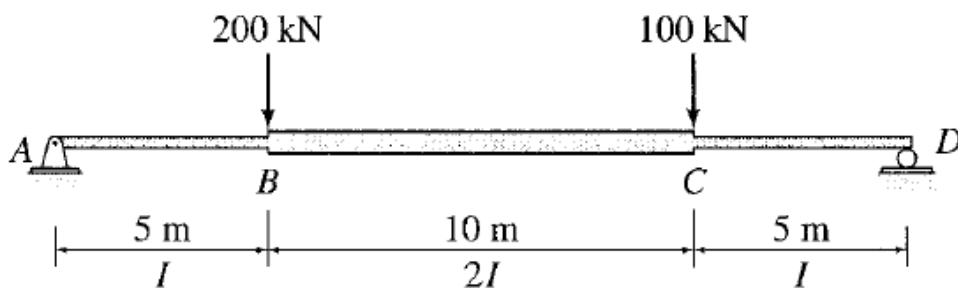
For the following beam: Determine

- Maximum deflection of the beam in terms of P, L, E, and I.
- The minimum moment of inertia (I) so that the maximum deflection in the beam doesn't exceed ($\Delta_{max} = \frac{L}{360}$), if P= 120 kN/m, L= 6 m, E= 200 GPa.



For the given Beam Determine:

- The rotation of point B
- The vertical deflection of at middle of the beam.



Question 2:

In the given Composite structure, the overhang beam (AB1) is pin connected (hinge) to the truss at joint 1. The beam is made of concrete ($E=25 \text{ GPa}$, $I=4 \times 10^6 \text{ mm}^4$) and the truss is made of steel ($E=200 \text{ GPa}$, $A_{\text{all members}}= 4000 \text{ mm}^2$).

Determine the deflection of joint 7 due to the shown loading. (ignore axial deformation in the beam)

