CE383 STRUCTURAL ANALYSIS

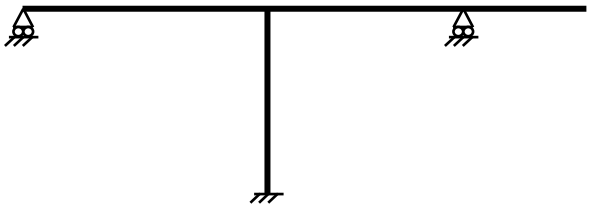
FALL 2014-2015

HOMEWORK 1

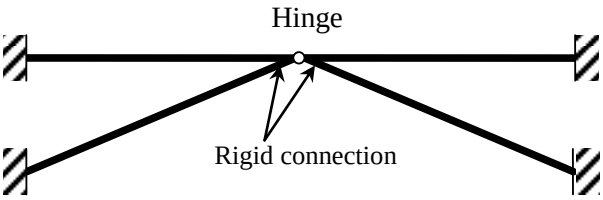
DUE: 20.10.2014 @ 13.00

Homework assignments submitted past the deadline will be accepted subject to a 20% deduction per day. Submit your homework assignments to the CE 383 box at the entrance of the K2 building.

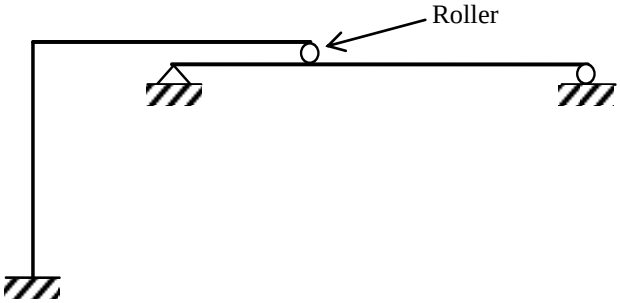
Q1) For the following frame structures, determine the degree of static indeterminacy (D_T) by clearly showing your calculations (don't just guess a number).



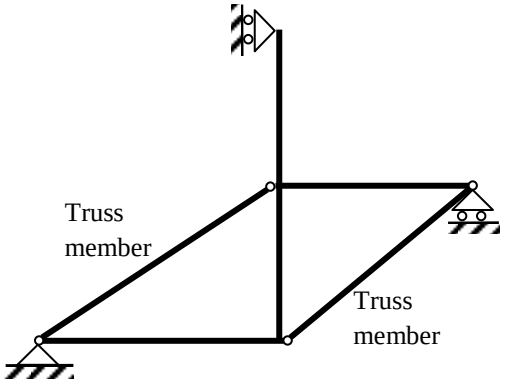
Structure A:



Structure B:

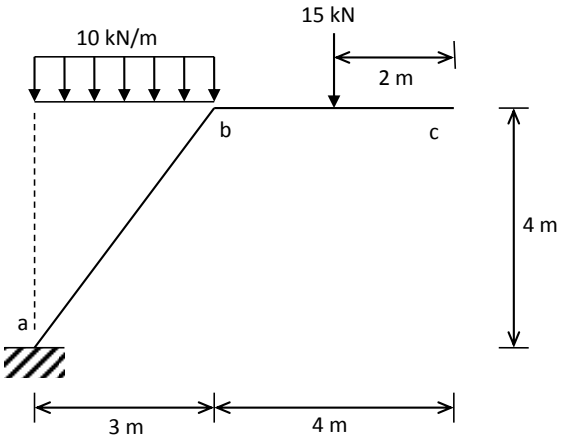


Structure C:

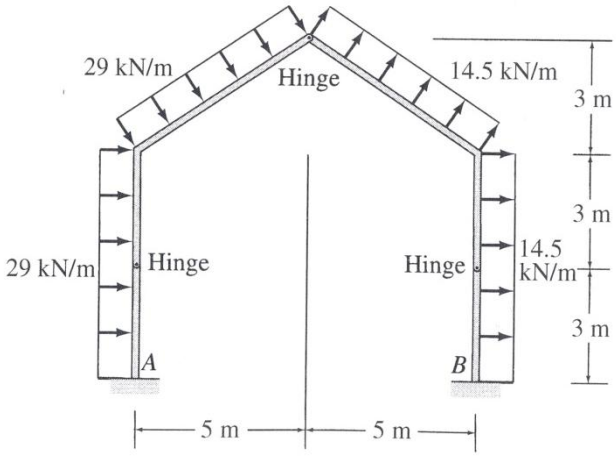


Structure D:

Q2) For the following statically determinate structures, determine the support reactions and plot the internal force diagrams (normal force, shear force and bending moment). **Clearly indicate your sign convention and show all critical values on the diagrams.**



Structure A:



Structure B:

Q3) Given statically determinate structure is acted on by loads as shown. Assume that all members are <u>axially rigid</u>. Take I = 4160 cm^4 and E = 200 GPa. Use **integration method** or **moment-area method** (from CE224 course) and calculate the displacements and rotations at B and C.