

Homework #3

Assigned on Friday, Jan 30; due on Friday, Feb 06

A simply-supported truss is shown in **Figure 1** with applied loads in terms of P . Using the unit incremental load method perform an elastic-plastic analysis of the truss under proportionally increasing loads. Assume elastic-perfectly plastic force-deformation behavior for each member, both in tension and compression. Plot P versus vertical displacement (δ) at node 3.

Take $A = 1300 \text{ mm}^2$, $P_y = 415 \text{ kN}$, $P_{cr} = 250 \text{ kN}$ for members 8, 9, 10 & 11; and $A = 2250 \text{ mm}^2$, $P_y = 715 \text{ kN}$, $P_{cr} = 500 \text{ kN}$ for all other members. Take strut height (e.g., member 5 or 6) = 3 m and chord (e.g., member 3 or 4) length = 4 m.

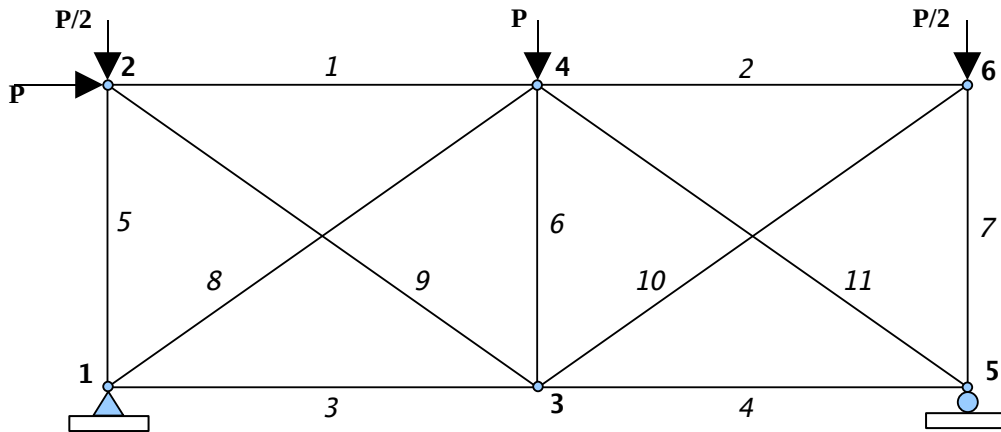


Figure 1. Simply supported truss with loads.