

Assignment 1 (April 19, Submit by April 26)

Consider of a simply supported beam AB which is subjected to uniformly distributed load w . Assume that beam AB is linear elastic without weight and that the elastic modulus and moment of inertia of beam AB are E_b and I_b , respectively.

Determine the bending moment at C by choosing the primary structure as shown in Fig. 2.

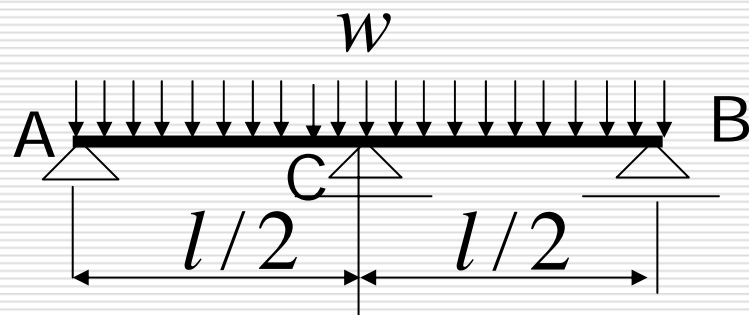


Fig. 1

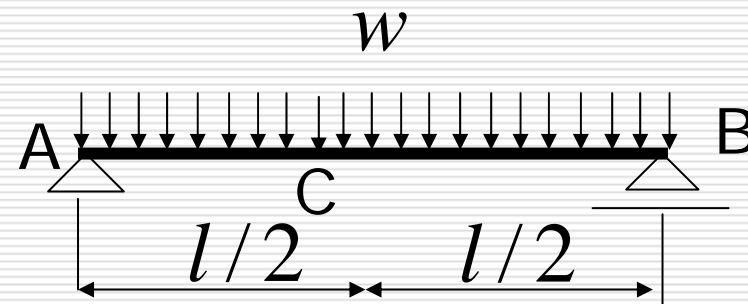


Fig. 2

- Determine deflection at C of the primary structure subjected to given load Δ_{C1}
- Determine deflection at point C of the primary structure subjected to redundant reaction Δ_{C2}
- Determine the redundant reaction R_{By} from the compatibility equation;
- Determine the bending moment at C of the structure shown in Fig. 1

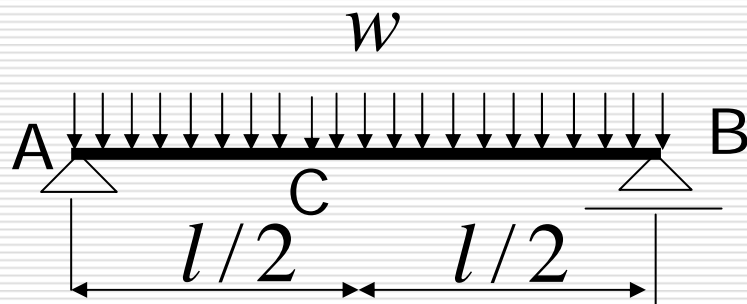


Fig. 2 Primary structure subjected to given load

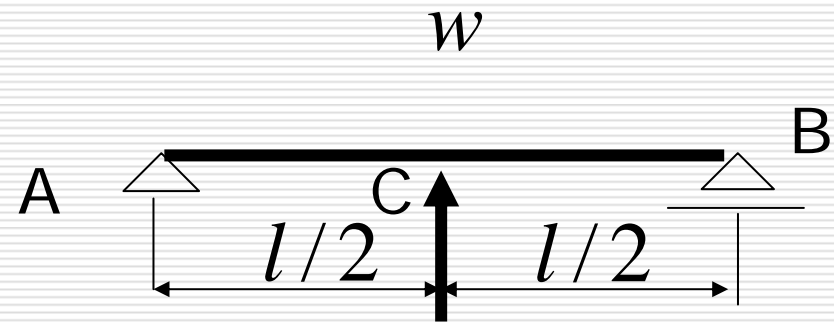


Fig. 3 Primary structure subjected to redundant reaction