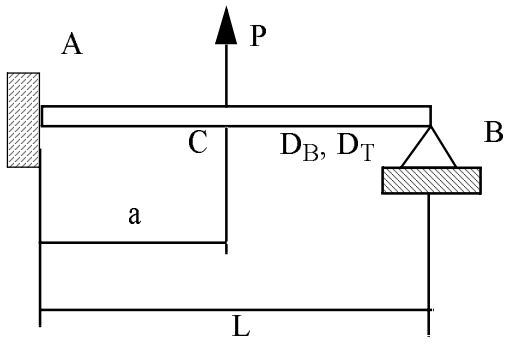
Problem Set 1

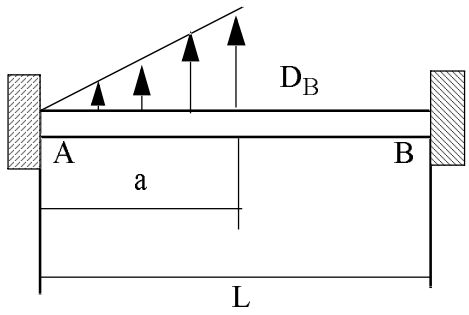
Problem 1.1

Determine the initial end actions and displacements. Include the effect of shear deformation.



Problem 1.2

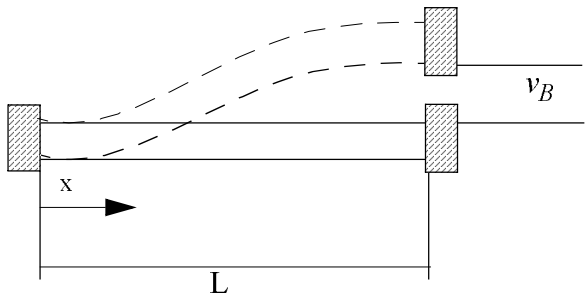
Determine The initial end actions at A and B. Neglect the effect of transverse shear deformation.



Problem 1.3

Determine the initial end actions at A and B due to vertical displacement v_B at end B. Neglect the effect of transverse shear deformation.

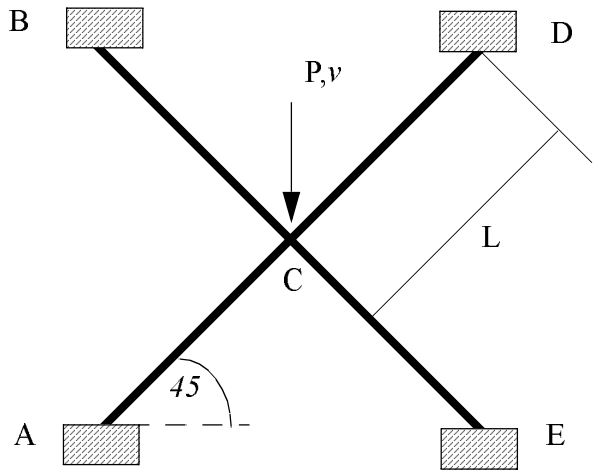
$$D_B(x) = D_{B1}(1 + \frac{x}{L})$$



Problem 1.4

Consider the 4-member system shown below. Each member has the same properties. Assume linear behavior.

1. Derive the relationship between P and *v*. Note that $u = \beta = 0$ at point B due to symmetry. Compare the contribution of axial and bending rigidities. Neglect transverse shear deformation.



2. Under what conditions would the solution not change significantly if A, B, C, D and E were hinged rather than fixed ? Discuss.

Hint: Use symmetry and anti-symmetry to simplify the structure.