

※ 考生請注意：本試題可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Determine the force in each truss member of the structure. (25%)

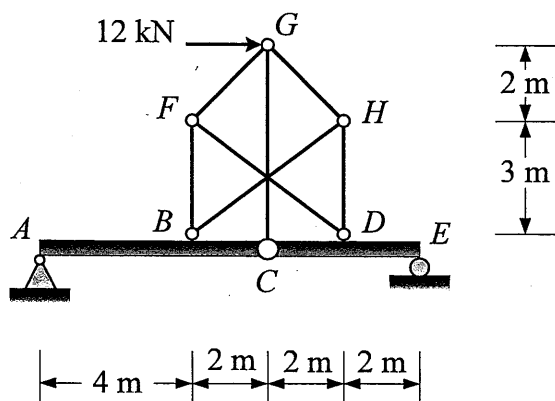


Fig. 1

2. Use the unit-load method (also referred to as the method of virtual work) to determine the horizontal deflection at A and the rotation at C. The flexural rigidity  $EI = 40(10^3) \text{ kN}\cdot\text{m}^2$ . (25%)

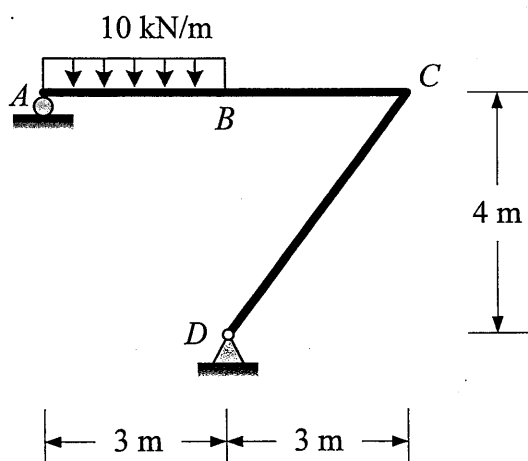


Fig. 2

3. Use the slope-deflection method to determine the moment at  $A$  and the slope at the end  $C$  of member  $BC$ . The flexural rigidity  $EI$  is constant. The spring at  $C$  is originally unstretched and has a stiffness  $k = 3EI/L^3$ . (25%)

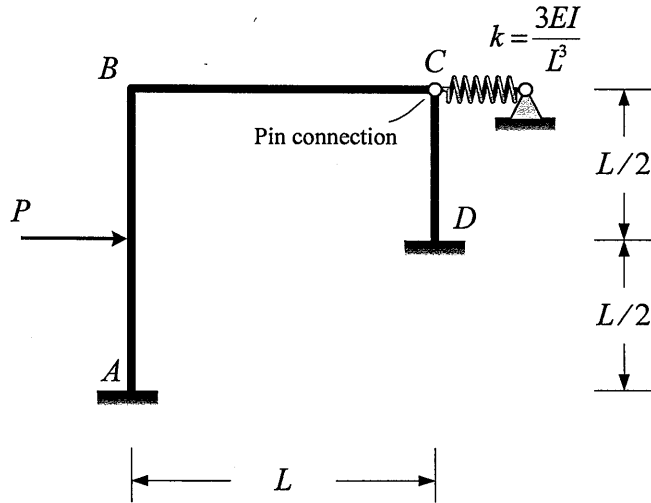


Fig. 3

4. Use the matrix stiffness method to determine the force in member 2. The axial rigidity  $EA$  is constant for all members of the truss. (25%)

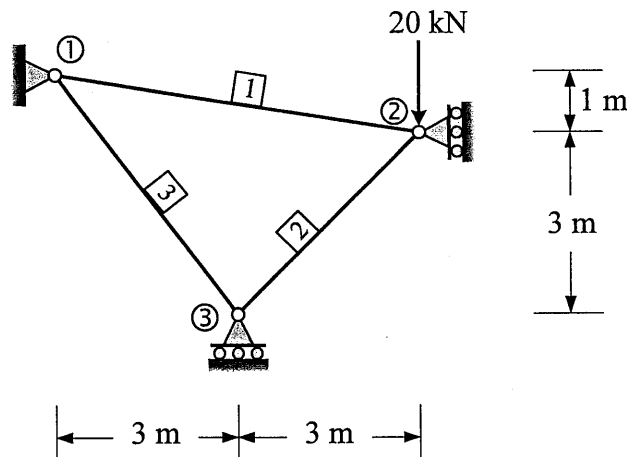


Fig. 4