

※ 考生請注意：本試題不可使用計算機。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 member of the truss. (25%)

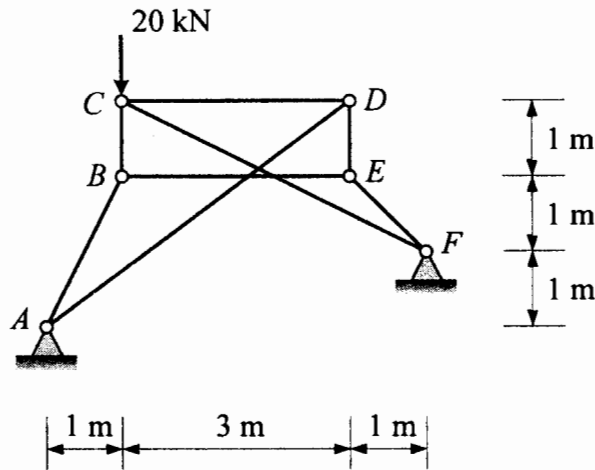


Fig. 1

2. Use the unit-load method (also referred to as the method of virtual work) to determine the rotation at point A . The flexural rigidity EI is constant throughout the entire frame, and the rotational spring at the elastic connection B has a stiffness $k = EI/L$. (25%)

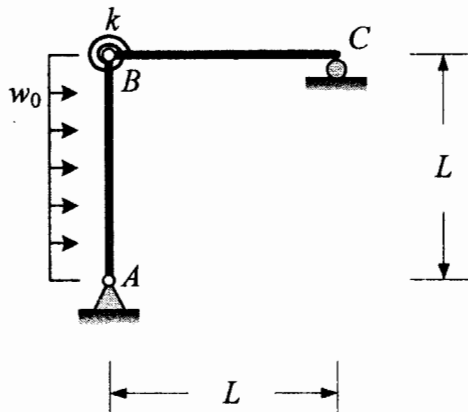


Fig. 2

3. If member CE is fabricated 9 mm too long, use the method of consistent deformations to determine the vertical deflection of joint D due to the error. The axial rigidity EA is 5×10^4 kN for all members. (25%)

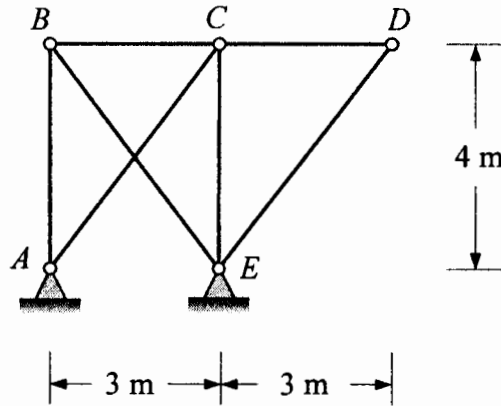


Fig. 3

4. Use the matrix stiffness method to determine the internal shear and moment at point D of the beam. The flexural rigidity EI is constant. (25%)

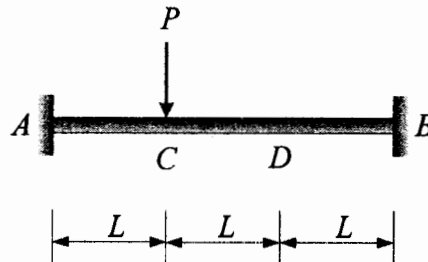


Fig. 4