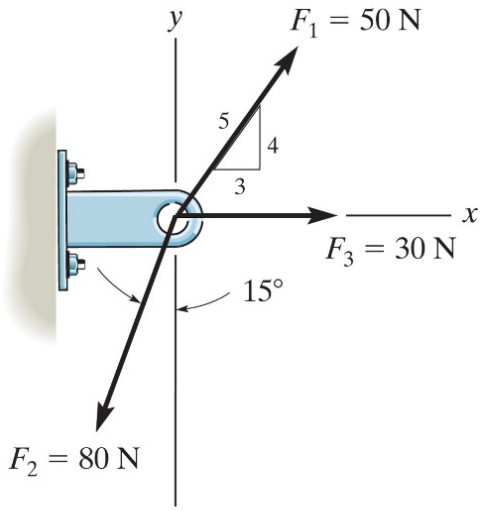
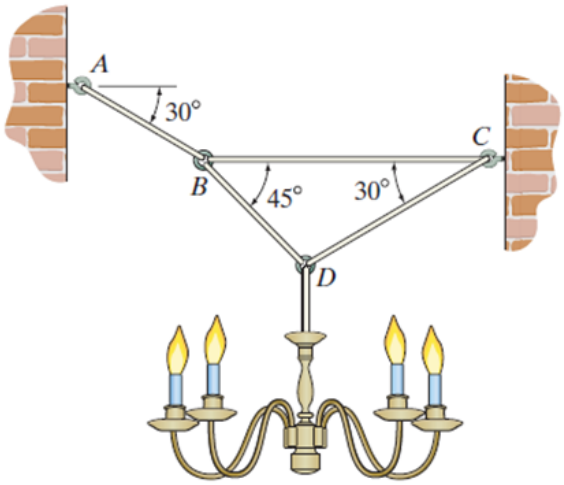
**Instructions:**

- Read the questions carefully. Detail all steps of your solution and include free-body diagrams. Writing only the equations and their solutions is not enough for full points.
- Make sure your answers include units.
- After the exam, return all papers to the exam supervisor, including this list of questions.

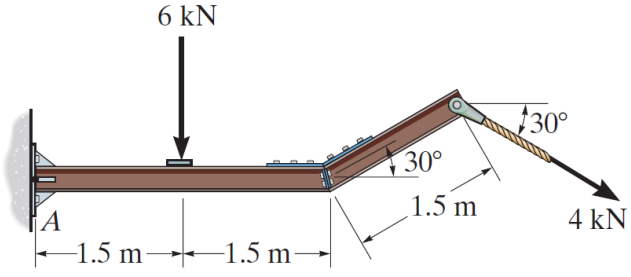
**Exercise 1**
Determine the magnitude of the resultant force and its direction, measured clockwise from positive *x* axis. (7 pts)



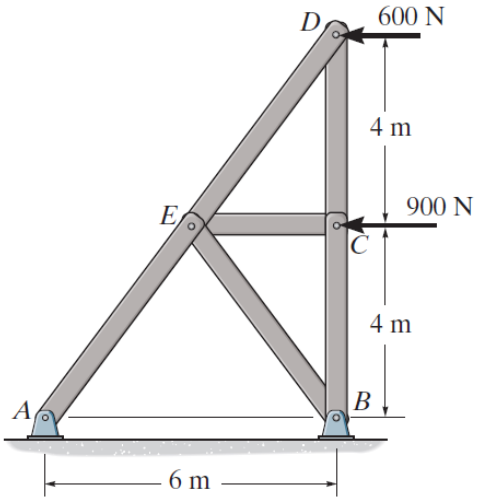

**Exercise 2**
Determine the tension developed in each wire used to support the 50 kg chandelier. (9 pts)



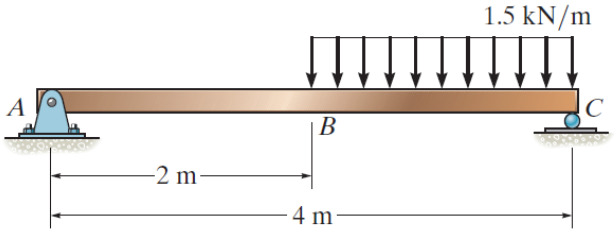

**Exercise 3**
Determine the components of the support reactions at the fixed support A of the cantilever beam. (7 pts)

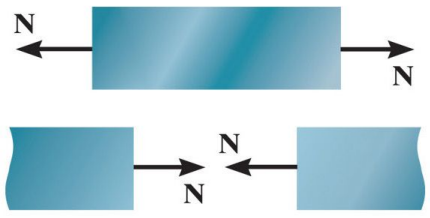


**Exercise 4**
Determine the force in each member of the truss and state if the members are in tension or compression. (11 pts)

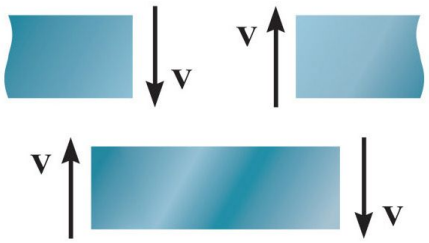



**Exercise 5**
Find the shear force and bending moment equations for the beam, and plot the shear and moment diagrams. (11 pts)

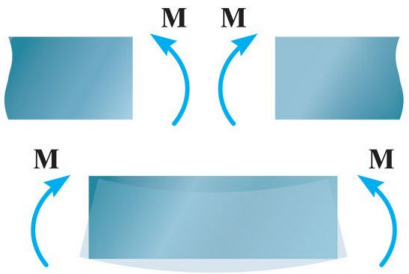



Positive normal force




Positive shear




Positive moment