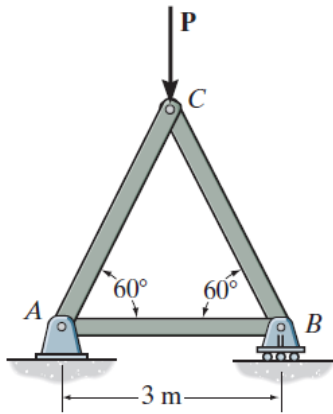


PS 4

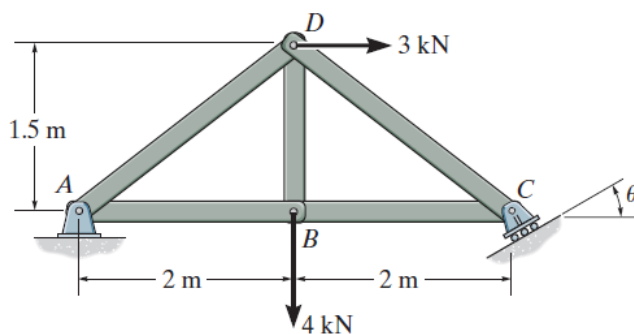
K.T.U. DEPARTMENT of CIVIL ENGINEERING STATICS PROBLEM SET 4

1



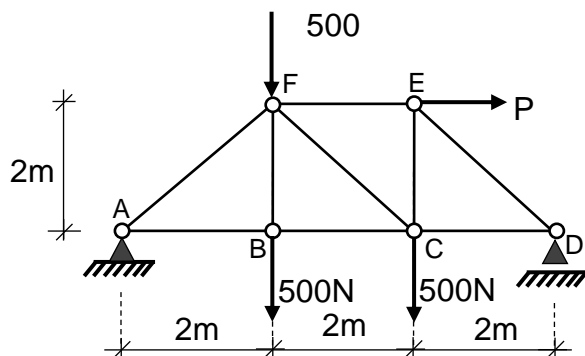
Determine the greatest load P that can be applied to the truss so that none of the members are subjected to a force exceeding either 2 kN in tension or 1.5 kN in compression.

2



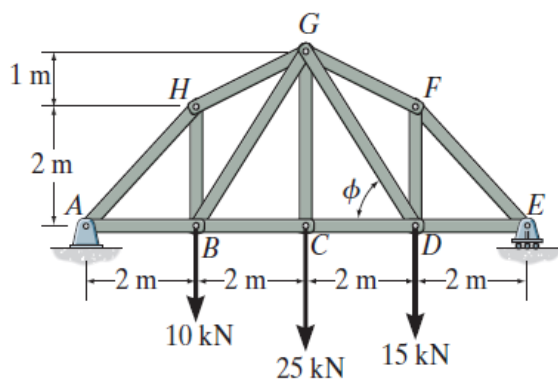
Determine the force in each member of the truss, and state if the members are in tension or compression. Set $\theta = 30^\circ$.

3



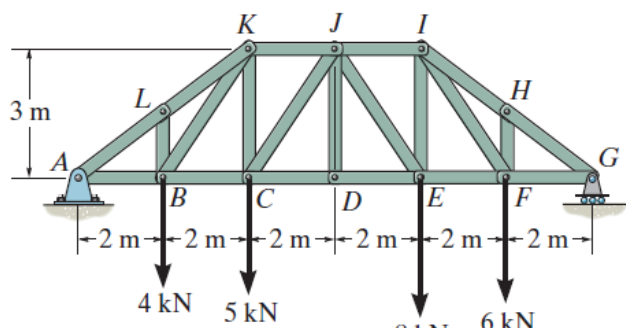
What should be the magnitude of the P in order to make the force in FE as compression.

4



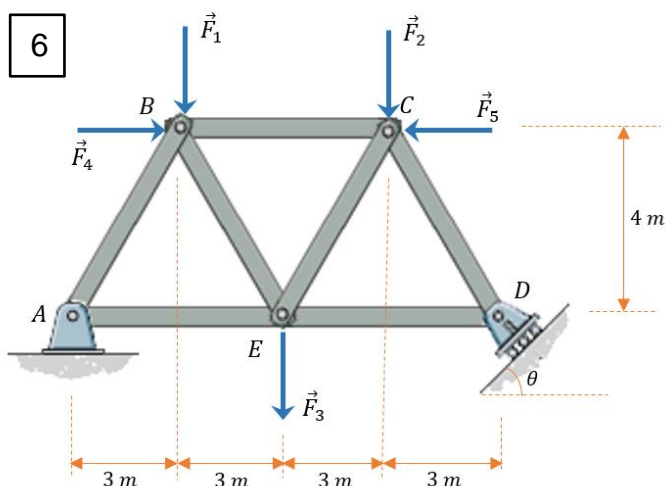
Determine the force in members GF , GD , and CD of the truss. State if the members are in tension or compression.

5



Determine the force in members JK, CJ, and CD of the truss, and state if the members are in tension or compression

6



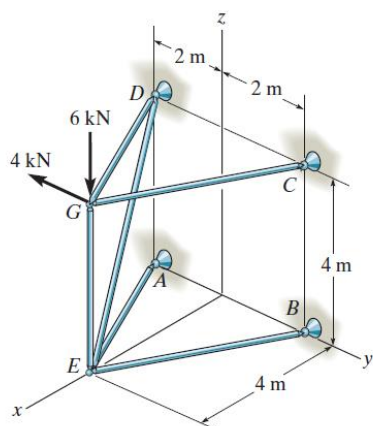
$\vec{F}_1, \dots, \vec{F}_5$ are applied to the truss system.

a) Find member forces in each member and state if the members are in tension or compression. (15p)

b) If the maximum force that any member can support is T_{max} in tension and C_{max} in compression, determine the maximum value of P that can be supported. (5p)

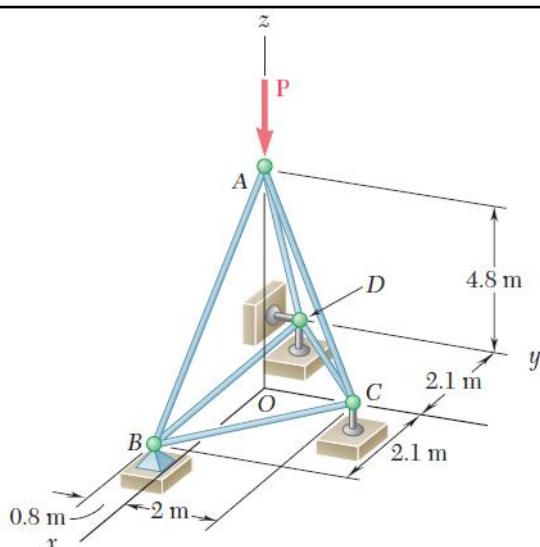
F_1	F_2	F_3	F_4	F_5	M_1	M_2	M_3	M_4	$q(x)$	θ
100N	150N	100N	0	0	100Nm	0	150Nm	0	x^2	30

7



Determine the force in each member of the space truss and state if the members are in tension or compression. The truss is supported by ball-and-socket joints at A, B, C, and D.

8



The truss shown consists of six members and is supported by a ball and socket at B, a short link at C, and two short links at D. Determine the force in each of the members for $\vec{P} = -2184\vec{k}$.