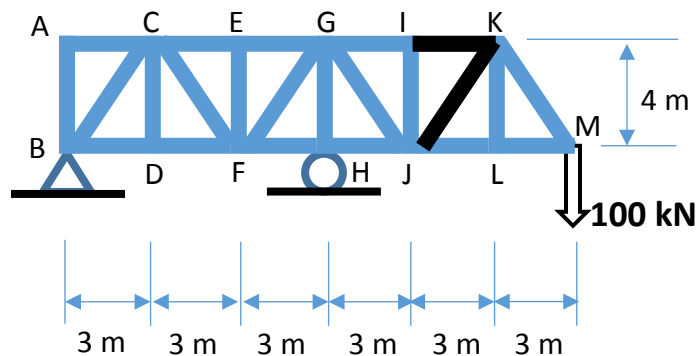


GNG 1105E – Quiz 3

November 10 2016

Find the forces in members **IK** and **JK** of the truss below and indicate if they are in tension or compression. Use either the method of joints, or the method of sections. **[10 marks]**

Bonus: Identify ALL zero-force members in the truss **[2 marks]**



Solution:

Bonus: There are six zero-force members: AB, AC, CD, EF, IJ, KL. [No part marks!]

Method of joints:

- 1) Recognizing that member KL is a zero-force member, first analyze joint M to find that F_{KM} is $(5/4)*100 = 125$ kN in tension.
- 2) Analyze joint K. Summing forces in the y-direction, we find that $F_{JK} = 125$ kN in compression. Summing forces in the x-direction, we find that $F_{IK} = 2*(3/5)*125 = 150$ kN in tension.

Using method of sections:

- 1) Section the truss through members IK, JK and JL. Analyze the right hand side of the truss.
- 2) Summing forces in the y-direction, we find that $F_{JK} = (5/4)*100 = 125$ kN in compression.
- 3) Summing moments about joint J, we find that $F_{IK} = (100*6)/4 = 150$ kN in tension.