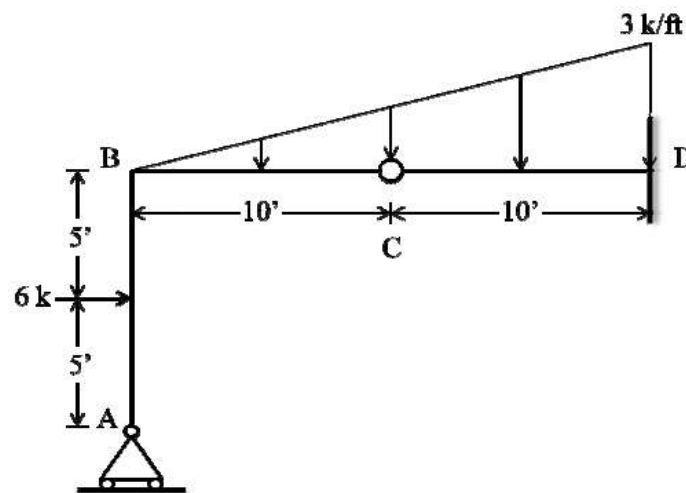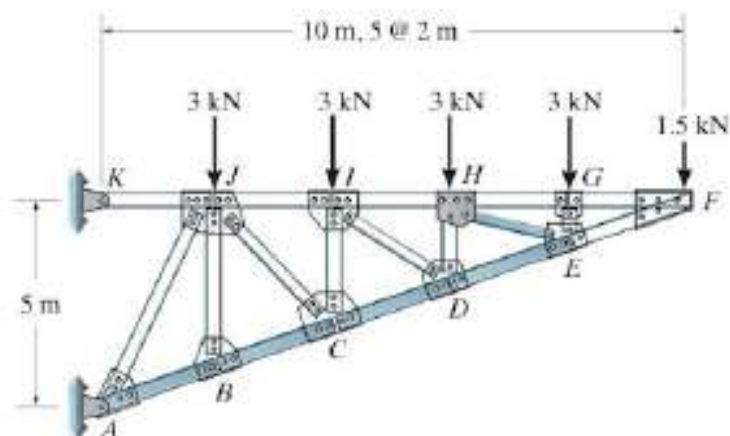**Due: October 23**

HOMEWORK 3

Problem 1: 4 points

a) Determine the shear and moment throughout the frame as a function of x
b) Draw the shear and moment diagram for the frame

Problem 2: 6 points

3–25. Determine the force in members IH, ID, and CD of the truss. State if the members are in tension or compression. Assume all members are pin connected.

Probs. 3–25/3–26

Problem 3: 10 points

The cable shown in the figure carries a triangular load that is 0 at the left-hand support and increases to w_o N/m at the right-hand support

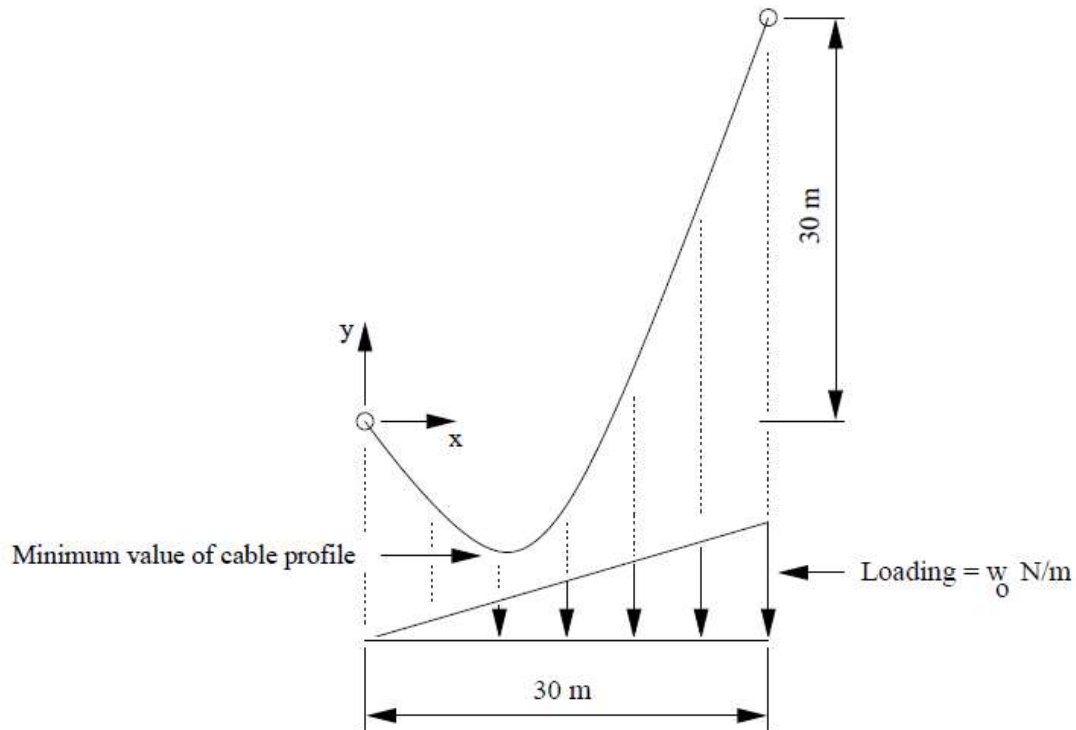

Figure 2: Elevation view of a swing bridge carrying a triangular loading.

[2a] Starting from first principles (i.e., the differential equation), show that cable profile is given by the equation

$$y(x) = \frac{w_o x^3}{180H} + \left(1 - \frac{5w_o}{H}\right) x. \tag{1}$$

Now let us assume that the minumum value of the cable profile occurs at $x = 10$.

[2b] Show that the horizontal cable force is:

$$H = \frac{20w_o}{6}. \tag{2}$$

[2c] Draw and label a diagram showing the horizontal and vertical components of reaction force at the left- and right-hand cable supports.