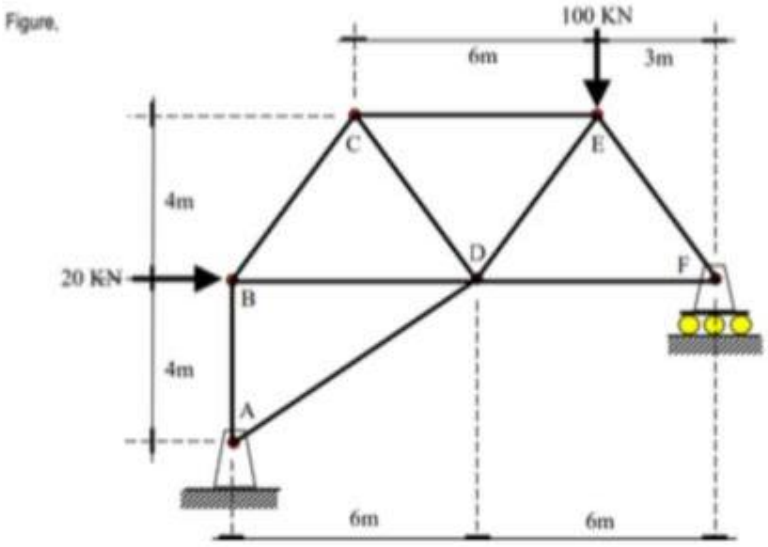
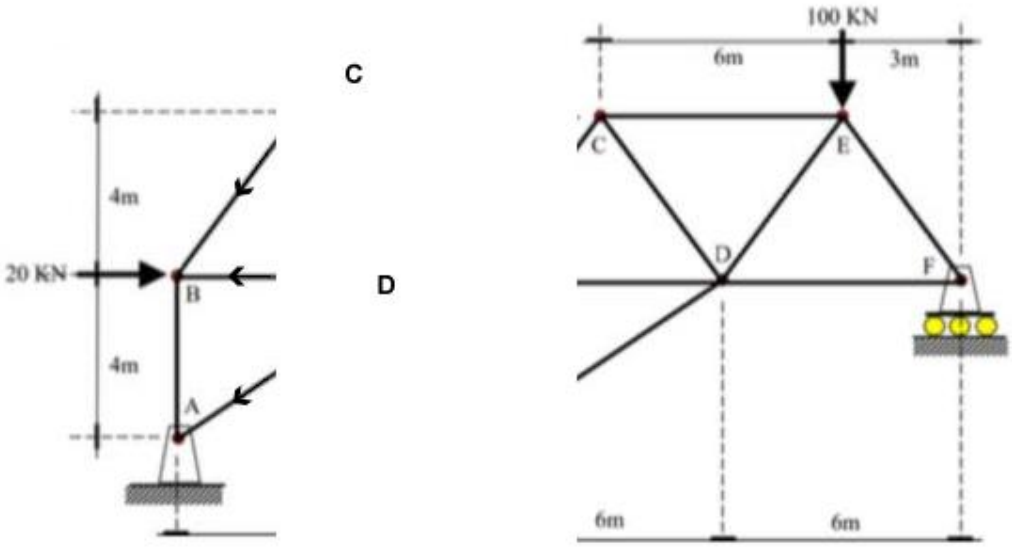
Truss Problem IV - Forces on and in a truss (Method of Sections)

IV. Determine the axial forces in members BC and BD of the truss loaded as shown using **Method of Sections.**



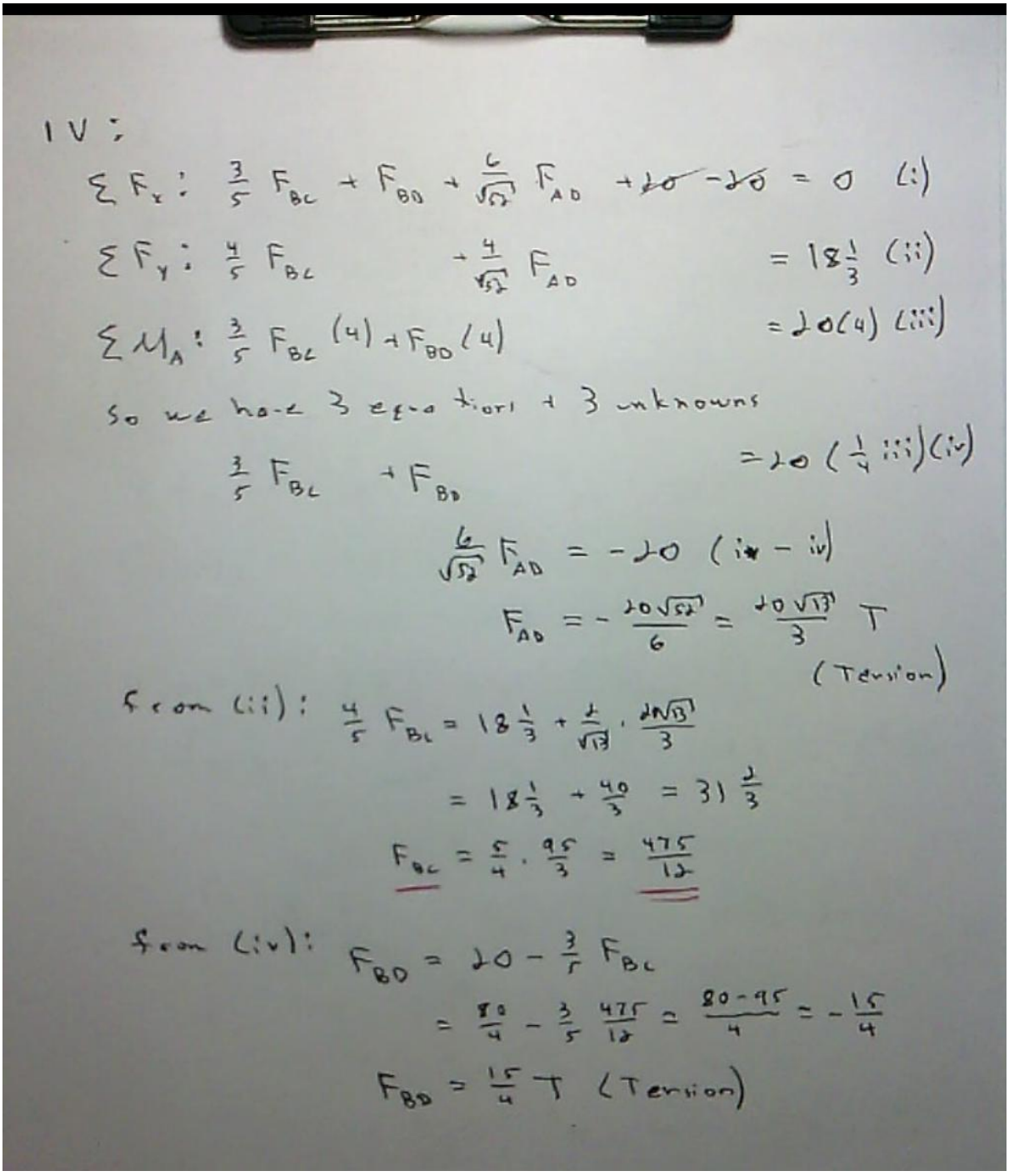
For the **Method of Sections** we "cut" the truss through the elements we want to find the forces in. In this case BC and BD. We then treat the forces in those elements as external forces and analyze the section of interest as a whole rather than using equations for any particular joint.



I have chosen a vertical cut through the two elements of interest, other cuts may be possible. Either side can be analyzed; I am using the left one since it is smaller. Although it may not matter since we

are only using external forces, making the number of internal joints irrelevant. The three members with unknown forces are all assumed to be under compression (so a – indicates tension).

We have the three known reaction forces plus F_{BC}, F_{BD} and F_{AD} which are unknown, so we have three unknowns and need three independent equations.



The result can be verified by using the Method of Joints for one or more of the same sections. I did this for F(BD) and got 15/4 T(ension), the work of checking is left for the reader. See Truss Problem III and Truss Problem 1 for the Method of Joints.

Solution by James Frankenfield, posted on jamesfrankenfield.com in the Academic Library