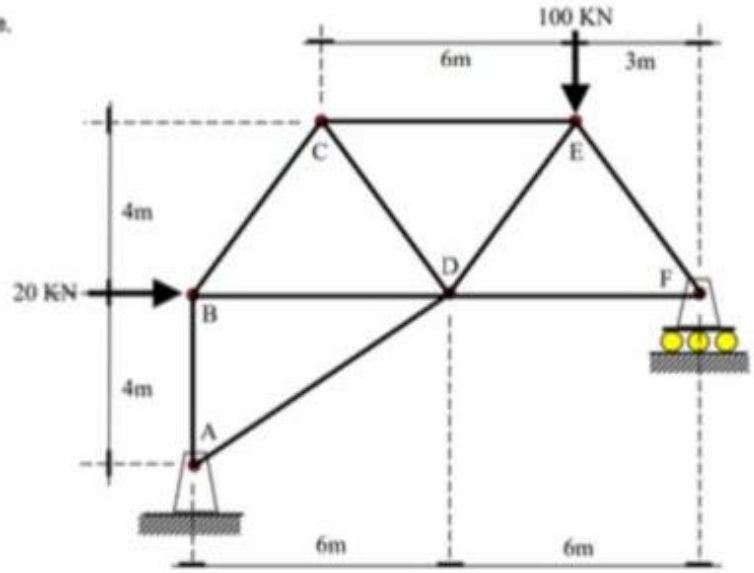
Truss Problem III - Forces on and in a truss (Method of Joints)

III. Determine the axial forces in members CE and DE of the truss loaded as shown using **Method of Joints.**

Figure.



This truss problem was posted in a math group on Facebook. Actually 2 groups, shortly after I posted a solution in one group the same problem showed up on another one.

In this problem we are asked specifically to use the Method of Joints. First we calculate the external reaction forces at A and F, treating the structure as a single object in static equilibrium. Then each joint can be anayzed separately by summing the x-force components and the y-force components and setting those to zero (for static equilibrium). We only need the forces in two members here but we could continue the approach to the rest of the joints and ultimately find the forces in all members.

There is another approach – the Method of Sections. In that method the truss is cut into parts and each (either) part can treated as a complete body. This method is useful if we only need the forces in a few certain elements. It could be used here if Method of Joints was not specified, in Truss Problem IV we want the force in each of two other members and the Method of Sections is specified. See that problem for an example of that method.

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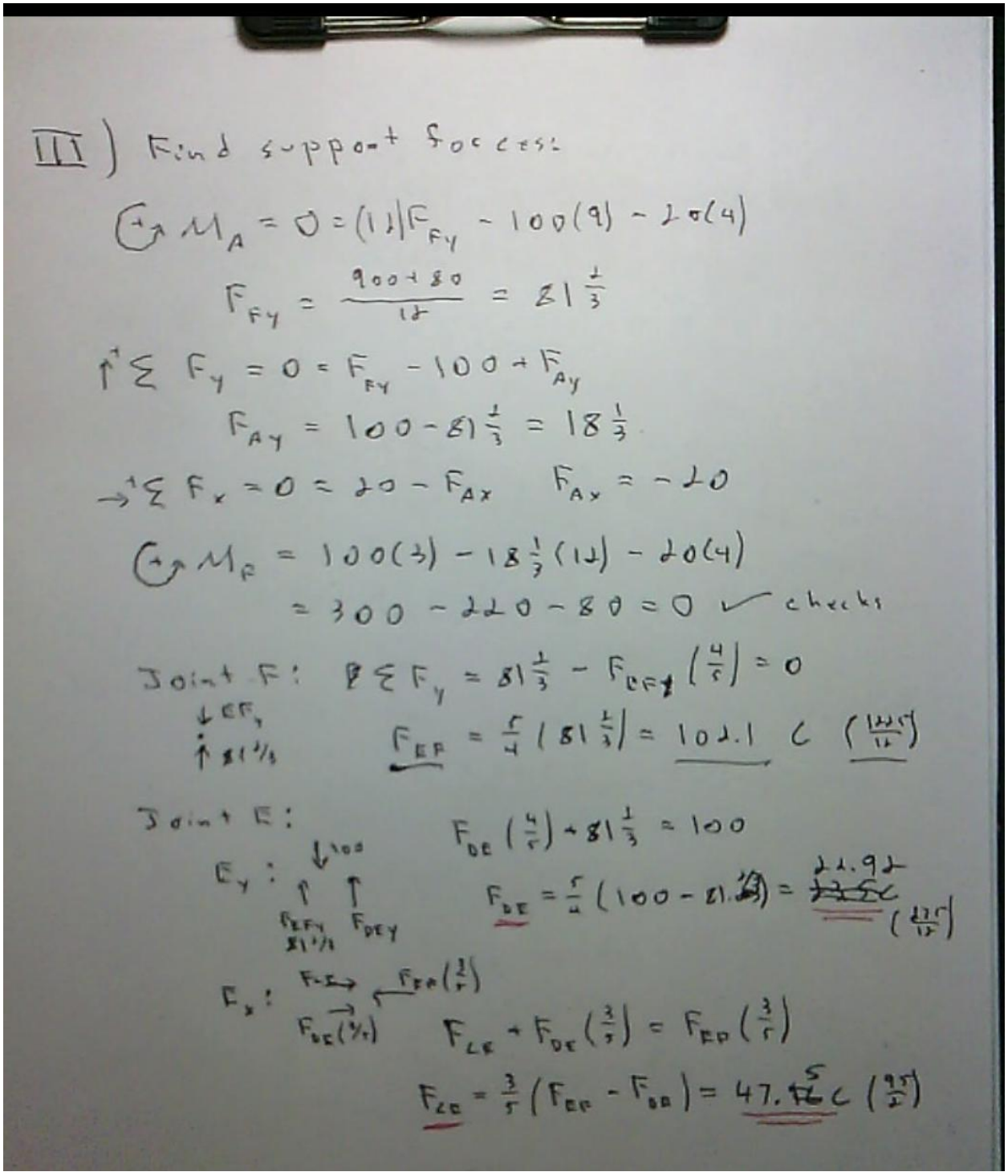

Solution by James Frankenfield, posted on jamesfrankenfield.com in the Academic Library