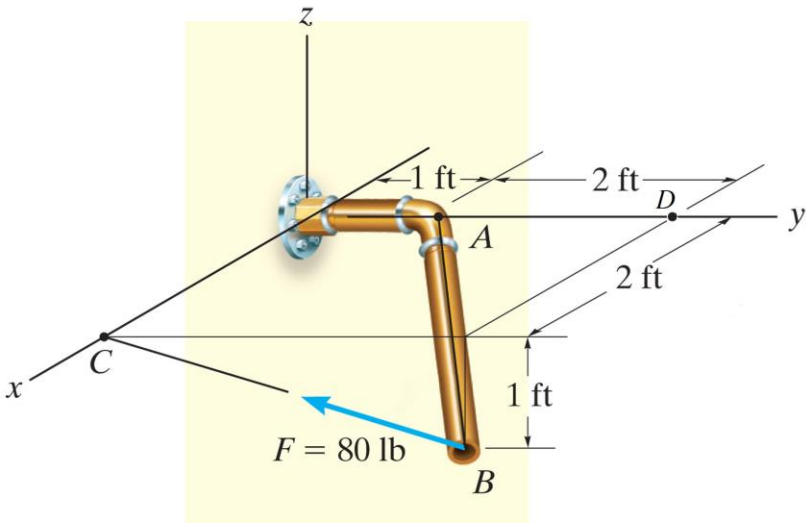
Name: _____ **CWID #:**_____ **Section Number:**_____

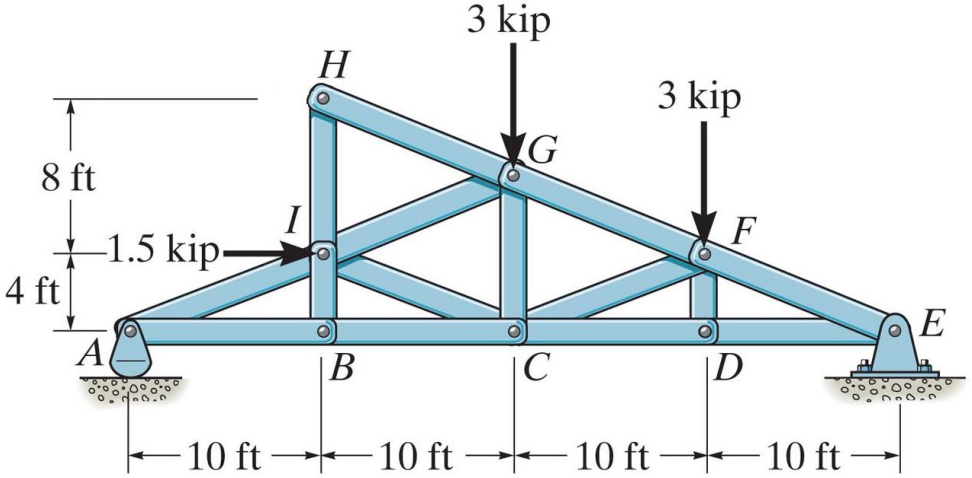
ENSC 2113 – SAMPLE FINAL EXAM #2

EACH PROBLEM IS WORTH 25 PTS. BOX YOUR ANSWERS AND PROVIDE PROPER UNITS, WHERE APPLICABLE. CALCULATIONS AND FREE BODY DIAGRAMS MUST BE SHOWN THAT SUPPORT THE ANSWER TO RECEIVE CREDIT.

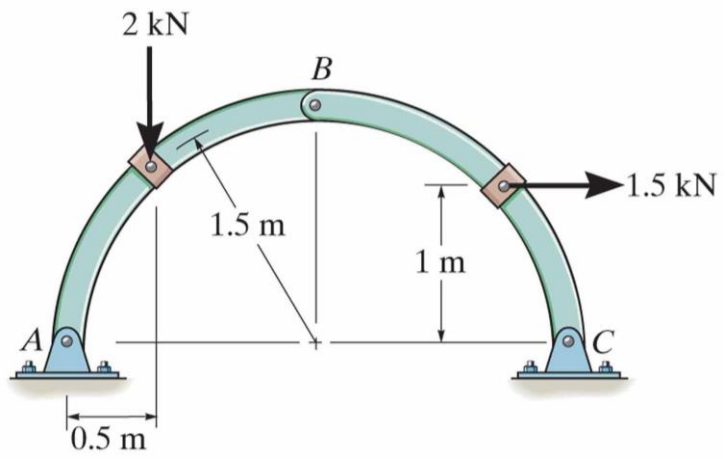
A force with a magnitude of 80 lb follows along a line from B to C. Determine the moment created by the force about a line defined from A to D. Express the result as a Cartesian Vector.



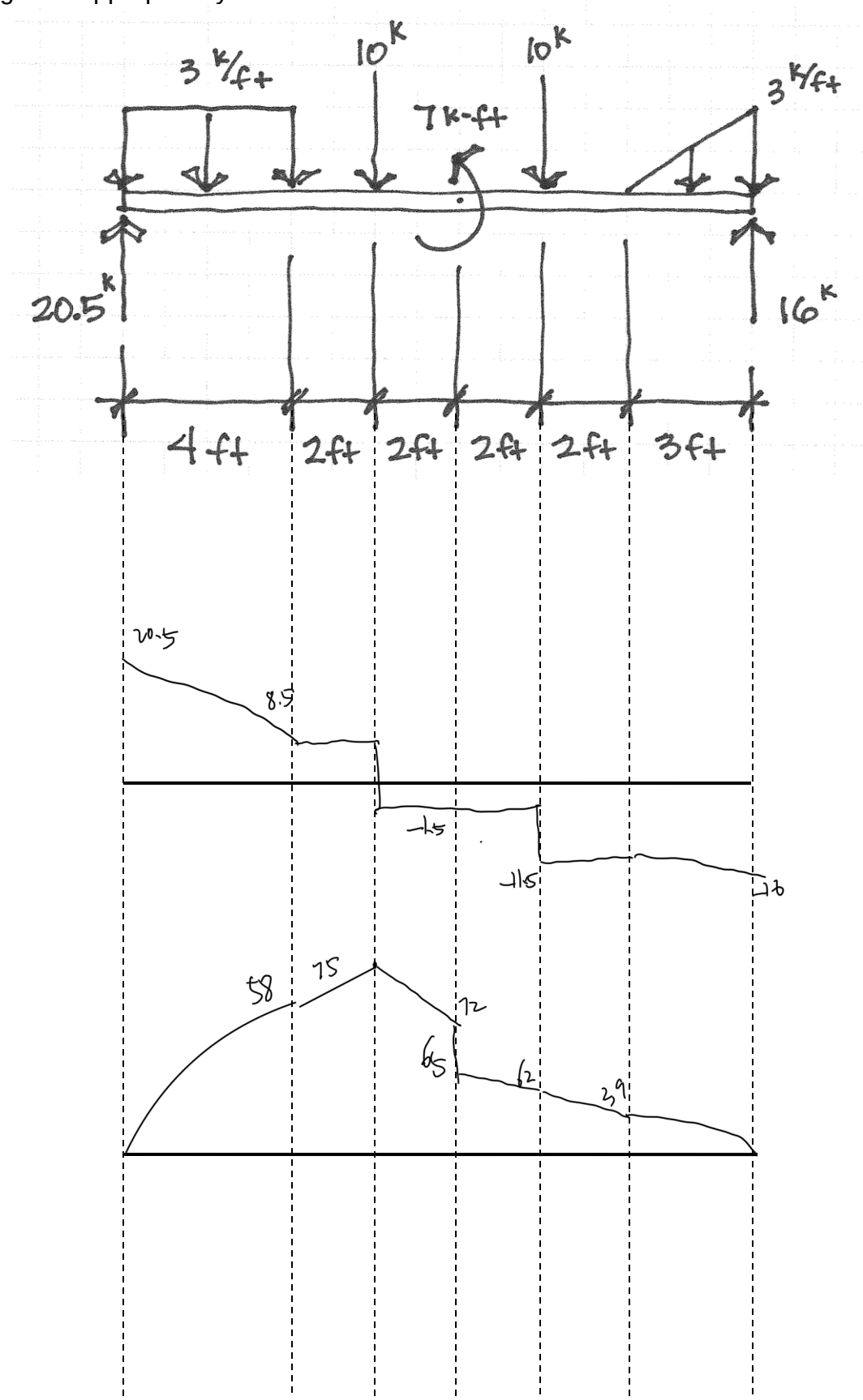
Determine the force in members GF, CF, and CD by the method of sections and the force in member FE by method of joints and indicate if the members are in tension or compression. The truss is supported with a rocker at A and a pin at E. List all zero-force members and draw all pertinent free-body diagrams.



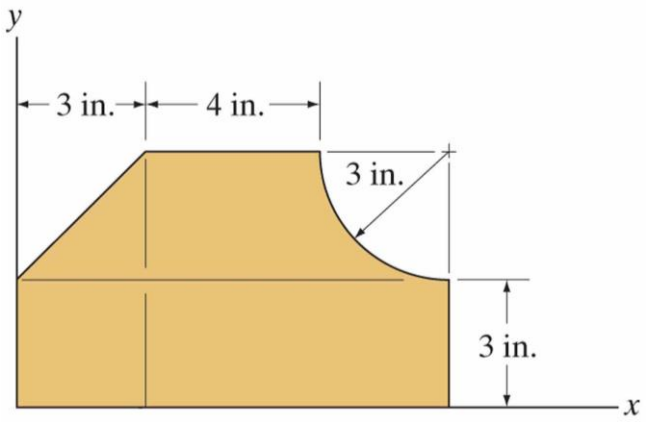
Given the two-member frame, made up of members AB and BC, calculate the external support reactions for the pins at A and C. Member AB is pinned to member BC with an internal pin at point B. Draw all pertinent free-body diagrams and indicate direction with arrows in your answer. The locations of the applied forces are not pins.



Draw the shear and bending moment diagrams for the loading condition below. Label all diagrams appropriately.



Using tabular form, calculate the moment of inertia about the centroidal x axis, x', for the object below. The coordinates for the overall centroid of the shape are (4.83 in, 2.56 in).



Determine the force P required for impending motion. The cylinder has a weight of 250 lb and the static coefficient of friction at all surfaces is 0.25. Neglect the size and weight of the wedge. Draw all pertinent free-body diagrams.