MECH 211

Fall 2006

Test 1

Due October 4, 2006 at the start of class.

Show all work. ***Any force existing in an equilibrium equation must also be denoted on an appropriate and correct free body diagram.*** Clearly indicate final answers.

Problem 1 = 15 points
Problem 2 = 10 points
Problem 3 = 10 points
Problem 4 = 15 points

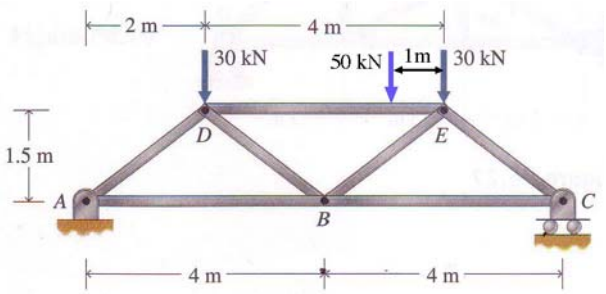
This test is taken under the Rice Honor Code system. You may consult only the textbook (Bedford and Fowler), notes that you have personally taken, and any material downloaded from the course website. You may use a calculator, including programmable calculators, no computers. The test must be taken during a 3-hour period, with an optional 30-minute break.

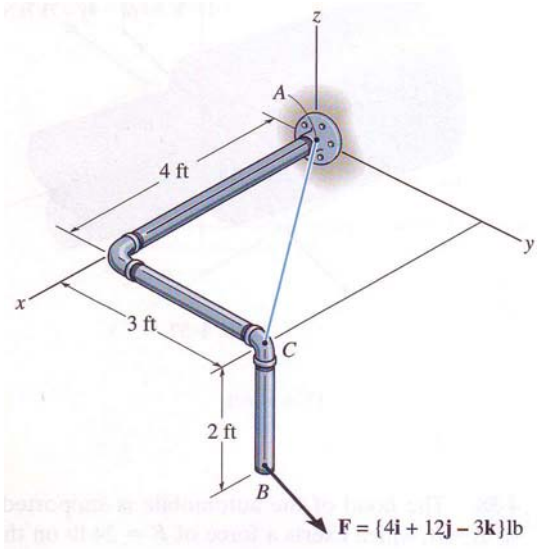
Time started:_____

Time finished:_____

Pledge:_____

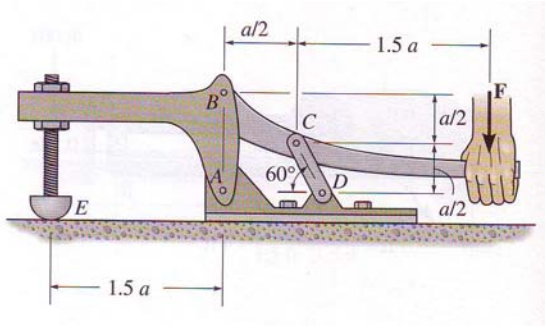
1. For the truss shown to the right, (a) determine the forces carried by each member. (b) Determine the internal reactions at the midpoint of member *DE*.

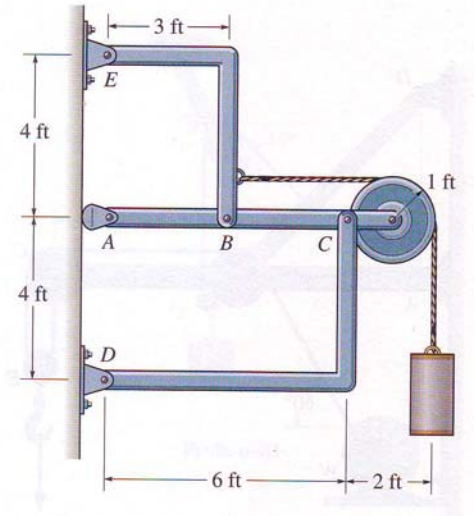




2. For the pipe assembly to the left, determine the moment of the force **F** about an axis extending between *A* and *C*. Express the result as a Cartesian vector.

3. The toggle clamp is subjected to a force **F** at the handle. Determine the vertical clamping force acting at *E*.





4. Determine the vertical and horizontal components of force at each pin. The suspended cylinder has a weight of 80 lb. The support at *A* is identical to a roller support.