PRINT NAME and NET ID_____

Signature_____

GEN_ENG_205-2_Sec24

Engineering Analysis II

Mock Exam: 2:00 – 2:50pm

Wednesday January 31, 2024

S. Gomaa

Instructions.

- Closed book and notes.
- Turn off all electronic devices and put away all items except a pen/pencil, eraser and a calculator.
- Remove hats and sunglasses
- Show sufficient work to justify your answer.
- While the test is in progress we will not answer questions concerning the test material.
- Do not leave early unless you are at the end of a row.
- Quit working and close the test when we say STOP.
- Quickly turn in your test to me or a TA. If a test leaves the room it will not be graded.
- You can use the right pages for calculations. If you need more paper, we will provide some more. There are 4 problems and 1 bonus question.

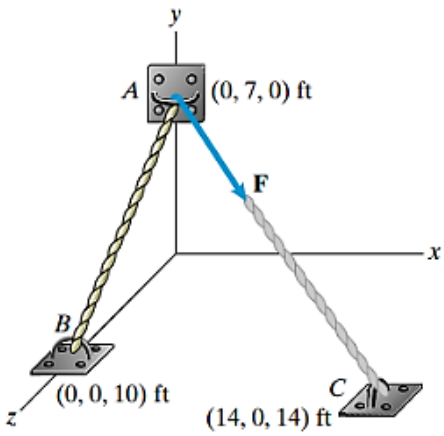
Problem 1 (10 points)

The cable AC exerts a 1000-lb force **F** at A.

a) What is the angle between the cables AB and AC?

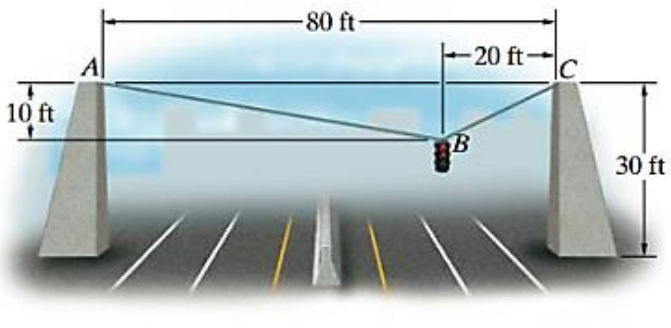
(5 points)

b) Determine the vector component of **F** parallel to the cable AB. **(5 points)**



Problem 2 (10 points)

A traffic engineer wants to suspend a 200-lb traffic light above the center of the two right lanes of a four-lane thoroughfare as shown. Determine the tensions in the cables AB and BC.

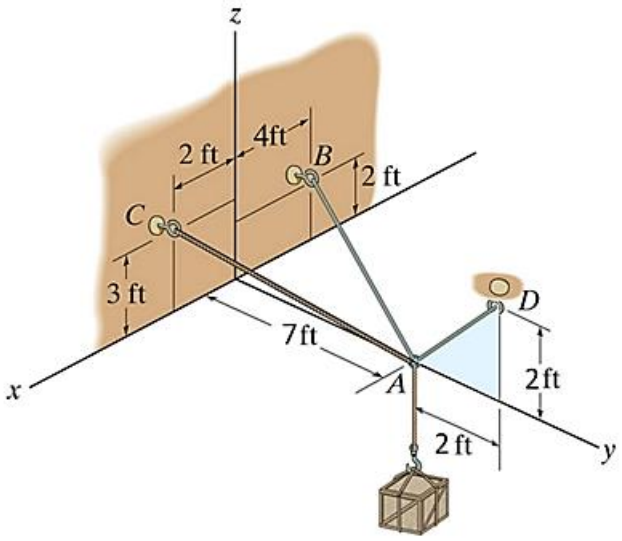


Problem 3 (10 points)

A 300-lb crate is supported by cables AB, AC, and AD. Note: Location D is in the y-z plane.

a) Draw the Free Body Diagram of the problem. **(2 points)**

b) Determine the magnitude of the forces in each cable. **(8 points)**



Problem 4 (10 points)

Determine the vertical reactions A_y and B_y and clearly indicate their directions if:

(a) The sum of vertical forces equals 0;
(b) The sum of moments about *A* equals 0.