

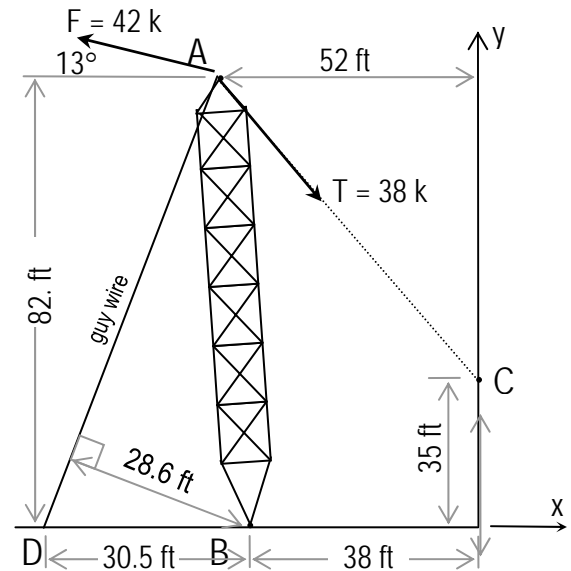
ENDS 231: Practice Quiz 1

Note: A one page (one sided) crib sheet is allowed during the quiz, along with a silent calculator.

Clearly show your work and answer.

The tower AB has a load of 42 k applied at point A in the angle and direction shown and has a cable attached at A in tension with a 38 k force.

- What are the *resulting component forces* of the load and tension at point A (size and direction)?
- What is the *resulting force* of the load and tension at point A? (size and direction analytically)
- What is the *resultant moment* of the load and tension at point A about the base of the tower at B? Is the tower stable if there is a guy wire from A to D preventing tipping towards C?



- If the perpendicular distance from B to the force in the guy wire is 28.6 ft, what is the size of the force from the resultant moment found in part c?
- [some short question from the text material]

Answers – Not provided on actual quiz!

- $R_x = -12.7 \text{ k}$, $R_y = -16.0 \text{ k}$
- $R_A = 20.5 \text{ k}$, $\theta = 231.5^\circ$ or -128.5°
- $M_{R@B} = 1268.3 \text{ k-ft}$ \therefore the tower will tip (unstable)
- $F_{\text{wire direction}} = 44.3 \text{ k}$

Disclaimer: Answers have NOT been painstakingly researched.