**CVEN 221 Honors - Homework #10**

1) **For Problem 3,** Draw a graph that includes the reaction at points "A" and "B" as the distance "d" is varied along the entire length of the beam for the given forces F1, F2, and F3 and locations. Use this chart determine the acceptable range of d if the maximum allowable value for each reaction is:
   a. 190 N
   b. 50 N
   c. 275 N

   When F1, F2, and F3 are to be 50 N, 100 N, and 150 N, respectively, and the distance between the forces are 450 mm as shown below.
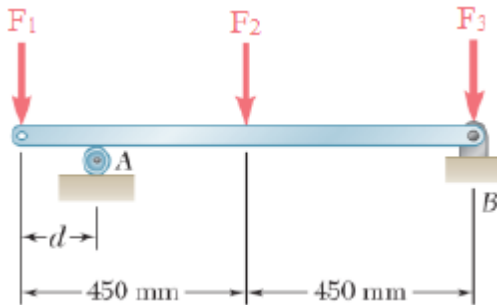
2) **For Problem 6,** Write a computer program to determine the tension (T) in the cable and the magnitude of the reaction at point A (R_a) for the crane shown below. The inputs for the program should be the weight of the boom (W), the lifting load (P), the angle of the boom (Θ) measured horizontal from grade. You may assume that the 10 degree angle between the boom and the tension cable remain constant. In addition, the overall length of the boom from A to B is 40 ft and the center-of-gravity is located at point G at mid-length.
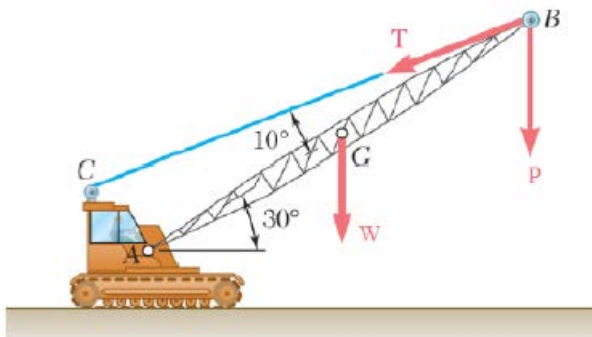
   Plot the tension and reaction at A as a function of boom angle from 0 to 90 degrees taking the weight of the boom to be 5.2 kips and the lifting load to be 20.6 kips. Before plotting these data, you may check your program by solving the problem given by McGraw-Hill Connect.