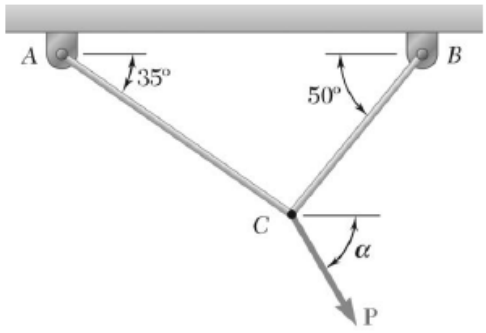
ES221 ENGINEERING MECHANICS I

Additional Problems-Set III

Due Date: 03.11.2020

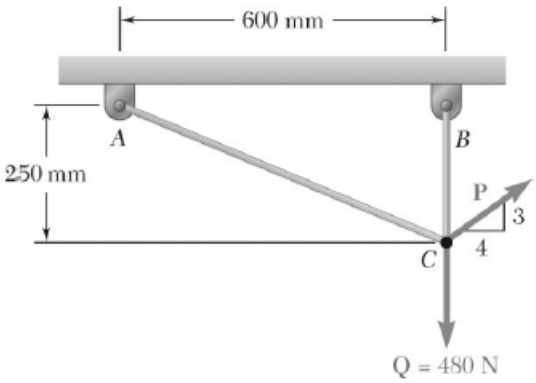
Q1) (30 pts)

Two cables tied together at *C* are loaded as shown. Knowing that the maximum allowable tension is 1200 N in cable *AC* and 600 N in cable *BC*, determine (a) the magnitude of the largest force **P** that can be applied at *C*, (b) the corresponding value of α.



Q2) (30 pts)

Two cables are tied together at *C* and loaded as shown. Determine the range of values of *P* for which both cables remain taut.



Q3) (40 pts)

The sphere E has a mass of 6 kg and is supported as shown in figure below. Determine (a) the force in spring CD and (b) the change in length in spring CD if it has a stiffness of 300 N/m. Specify if the change in length is elongation or shortening. (g=9.81 m/s^2)