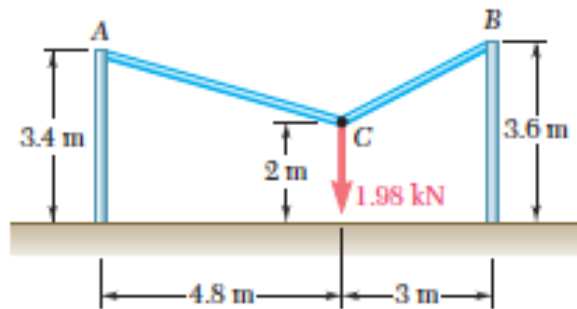ES 208 Mechanics

Tutorial 1

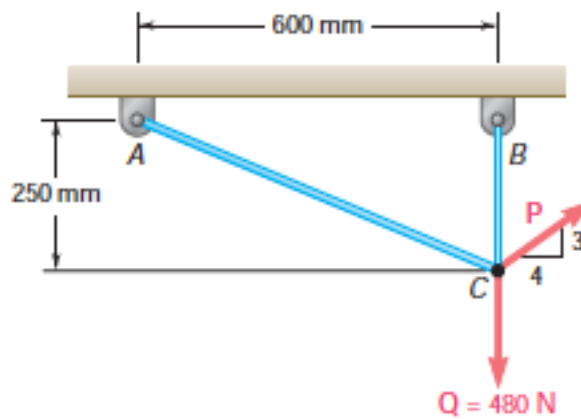All problems are taken from Beer and Johnston's book

2.47 Two cables are tied together at C and loaded as shown. Determine the tension (a) in cable AC, (b) in cable BC.


Fig. P2.47

Ans: $T_{AC} = 2.5$ kN, $T_{BC} = 2.72$ kN

2.51 Two cables are tied together at C and loaded as shown. Knowing that $P = 360$ N, determine the tension (a) in cable AC, (b) in cable BC.

Ans: $T_{AC} = 312$ N, $T_{BC} = 144$ N

2.66 A 200-kg crate is to be supported by the rope-and-pulley arrangement shown. Determine the magnitude and direction of the force **P** that must be exerted on the free end of the rope to maintain equilibrium. (*Hint:* The tension in the rope is the same on each side of a simple pulley. This can be proved by the methods of Chap. 4.)
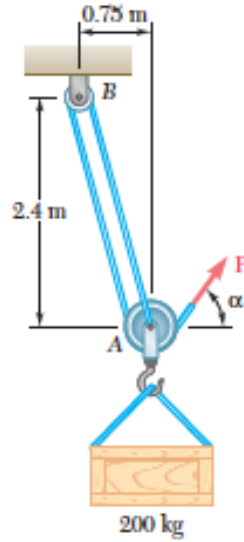
Fig. P2.66

Ans: $\alpha = +53.4°$ and $P = 724$ N, $\alpha = -53.4°$ and $P = 1773$ N