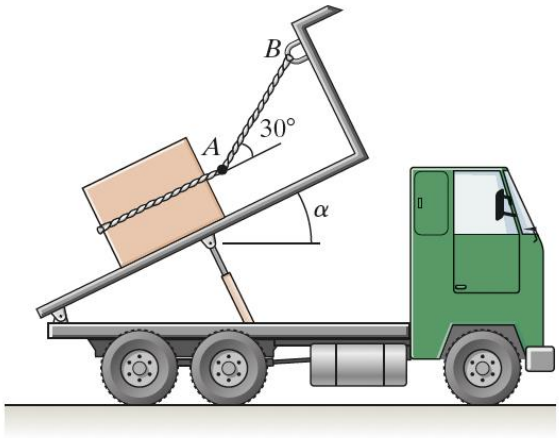
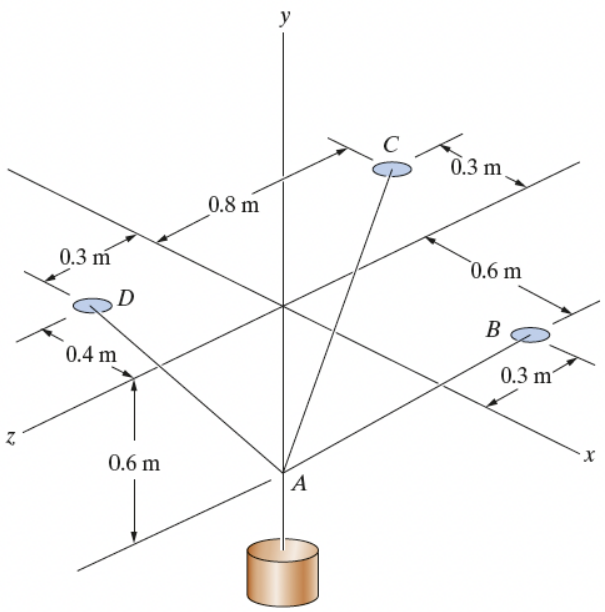
Problem – 01:

The 600-lb box is held in place on the smooth bed of the truck by the rope AB. (a) If $\alpha = 30°$, what is the tension in the rope? (b) The rope will safely support a tension no greater than 400 lb. Based on this criterion, what is the largest allowable value of α?



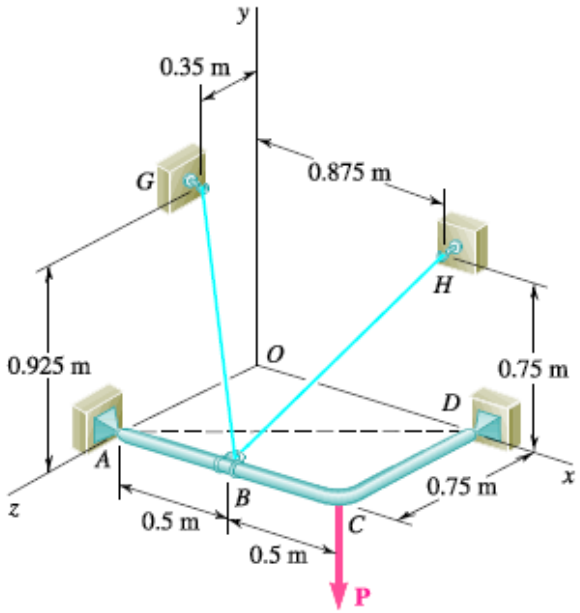
Problem – 02

The suspended object has a mass of 40 kg. Determine the tensions in cables AB, AC, and AD.



Problem – 03:

The frame ACD is hinged at A and D and is supported by a cable that passes through a ring at B and is attached to hooks at G and H. Knowing that the tension in the cable is 450 N, determine the moment about the diagonal AD of the force exerted on the frame by portion BH of the cable.



Problem – 04:

Replace the force system by an equivalent resultant force and couple moment at point O. Take $\mathbf{F}_3 = \{-200\mathbf{i} + 500\mathbf{j} - 300\mathbf{k}\}$ N.