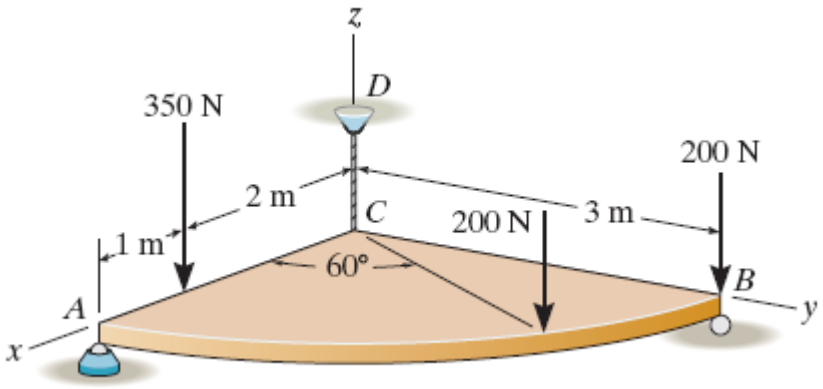
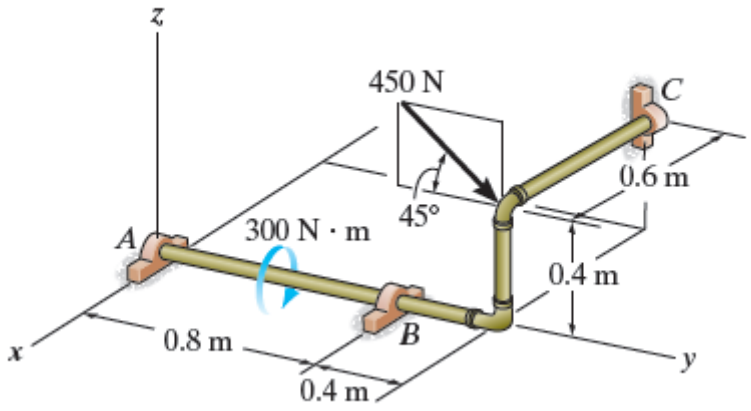
CHAPTER V- EQUILIBRIUM OF A BODY

1- Determine the force components acting on the ball-andsocket at *A*, the reaction at the roller *B* and the tension on the cord *CD* needed for equilibrium of the quarter circular plate.
(NB = 373.21 N, Az = 333.33 N, TCD = 43.5 N)



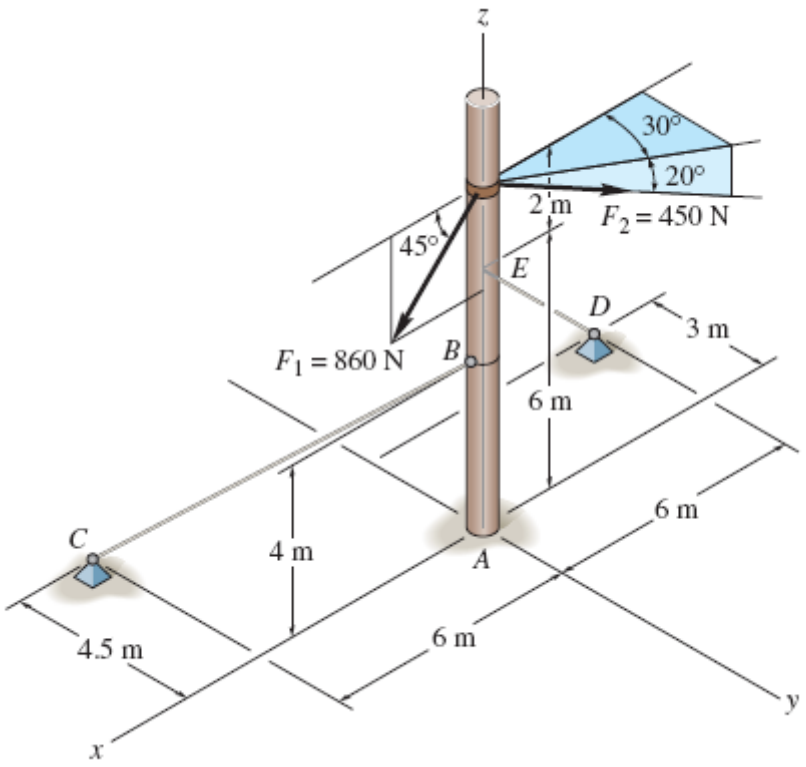
2- Determine the components of reaction acting at the smooth journal bearings *A*, *B*, and *C*.

(C_y=318 N, C_z=500 N, B_z=273 N, B_x=239 N, A_z =90.9)



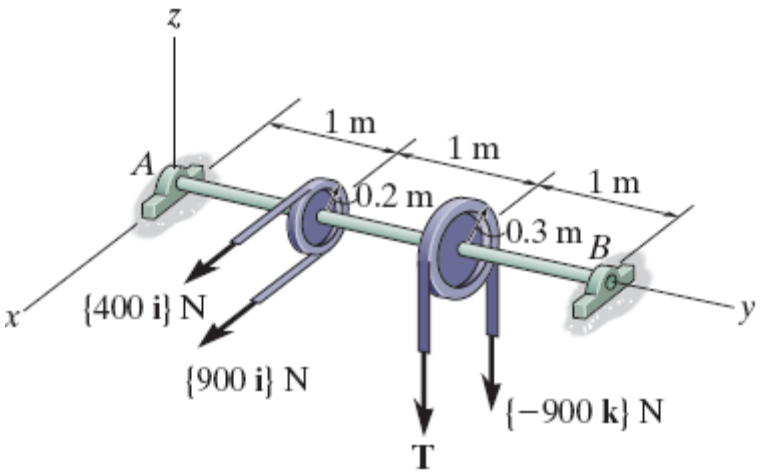
3- The pole is subjected to the two forces shown. Determine the components of reaction of *A* assuming it to be a ball-and-socket joint. Also, compute the tension in each of the guy wires, *BC* and *ED*.

(FBC = 205.09 N = 205 N FED = 628.57 N = 629 N, Ax = 32.4 N Ay = 107 N Az = 1277.58 N = 1.28 kN)

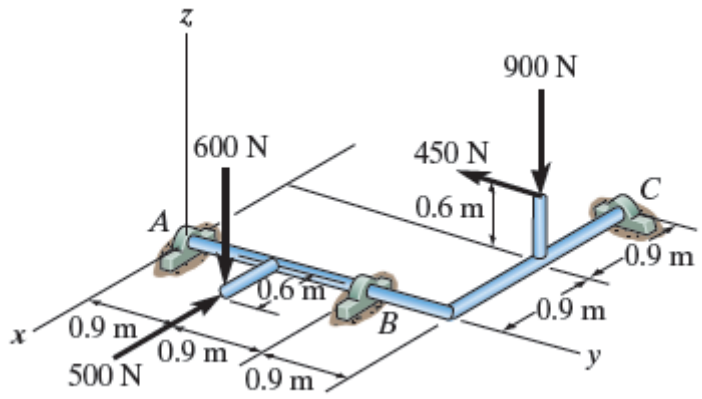


4- If the pulleys are fixed to the shaft, determine the magnitude of tension T and the *x*, *y*, *z* components of reaction at the smooth thrust bearing *A* and smooth journal bearing *B*.

(T = 1233.33 N = 1.23 kN, Bx = -433.33 N = -433N, Bz = 1422.22 N = 1.42 kN, Ax = 866.67 N = 867 N, Az = 711.11 N = 711 N)



5- The shaft is supported by three smooth journal bearings at *A, B*, and *C*. Determine the components of reaction at these bearings.
(C_y=450 N, C_z=250 N, B_z=1125 N, A_z=125 N, B_x=25 N, A_x=475 N)



6- Determine the *x* and *z* components of reaction at the journal bearing *A* and the tension in cords *BC* and *BD* necessary for equilibrium of the rod.

(A_x=0, F_{BD}=208 N, F_{BC}=792 N, $(M_A)_z$=700 N.m)