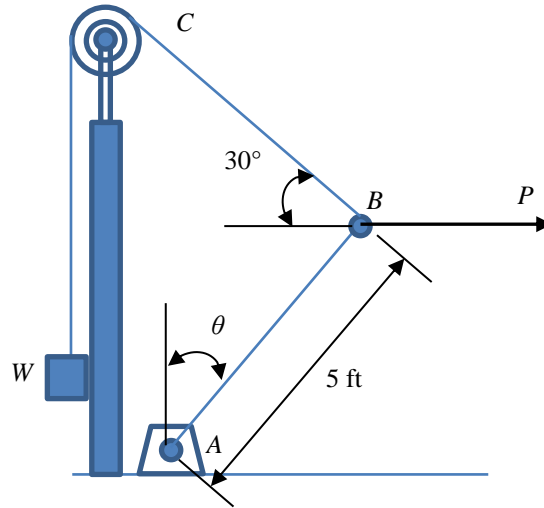


13. Two independently normally distributed weight $m \sim N(20, 1.5^2)$ kg and force $P \sim N(500, 5^2)$ N are shown in the system. If the cable AB is in the position shown below, determine the probability that the system may fail if the allowable tension of AB is 400 N.



Answer

The probability that the system may fail is

$$P(Y > 0) = 1 - P(Y \leq 0) = 1 - \Phi\left(\frac{-\mu_Y}{\sigma_Y}\right) = 1.56\%$$