8-7. A steel control rod *AB* is subject to a force *P* applied to the handle as shown in the figure. The rod is pin connected at it ends and its diameter is $d = 1.2\,\text{in}$. The force *P* follows a normal distribution $P \sim N(55, 2^2)\,\text{kip}$. The modulus of elasticity follows $E \sim N\left(25\times10^3, (2\times10^3)^2\right)\,\text{ksi}$. Find the probability of failure of the rod caused by buckling. Assume that Euler's formula is valid. Also, assume that P and E are independent. (**Ans.** $p_f = 4.94\times10^{-6}$)