

41. A truss shown in the figure is subjected to a force $F \sim N(5000, 500^2)$ lbf. The yield strength of rod AB is $S_y \sim N(20, 2^2)$ kpsi. If the maximum probability of failure is designed to be $p_f = 10^{-5}$, determine the minimum diameter of rod AB and then select a preferred diameter. Note that F and S_y are independent.

Answer: $d_{min} = 1.11$ in, $d_{preferred} = 1.2$ in

