1-3.   Determine the probabilities that the weight $W \sim N\left(3000, 400^2\right)$ N will fall into the water due to the following two failure modes: yielding failure of AB and yielding failure of BC. The diameter of the bars is 8 mm and the yield strength of the bars is $S_y \sim N\left(50, 6^2\right)$ MPa. Assume W and S_y are independent. Neglect the weight of the support rods and indestructible string. Does this structure need to be redesigned?   (**Ans.** $p_f = 0.20179$)