1-4. The system supports a normally distributed weight $W \sim N\left(25, 4^2\right)$ kN. If the cross sectional area of the support beam AC is 1500 mm^2 and its allowable yield stress also follows a normal distribution $S_y \sim N\left(50, 5^2\right)$ MPa, determine the probability that the structural member will fail. Assume W and S_y are independent variables and $\theta = 60^o$.   (**Ans.** $p_f = 8.42 \times 10^{-5}$)