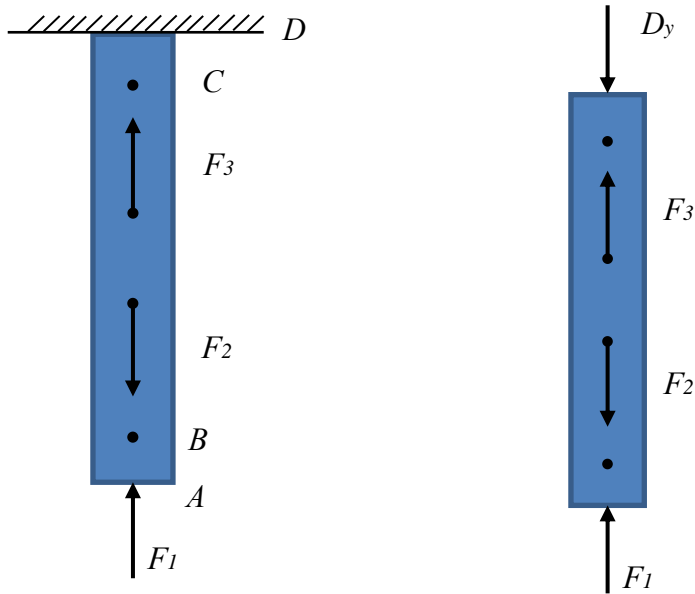5. The bar is loaded with F_1, F_2, F_3, which are independently and normally distributed with $F_1 \sim N(30, 1.5^2)$ kN, $F_2 \sim N(25, 1.3^2)$ kN, and $F_3 \sim N(45, 2.6^2)$ kN, respectively. Determine the distribution of the internal normal force at points B and C.

Solution

The distributions of the internal normal force at points B and C are $N_B \sim N(30, 1.5^2)$ kN and $N_C \sim N(50, 3.27^2)$ kN.