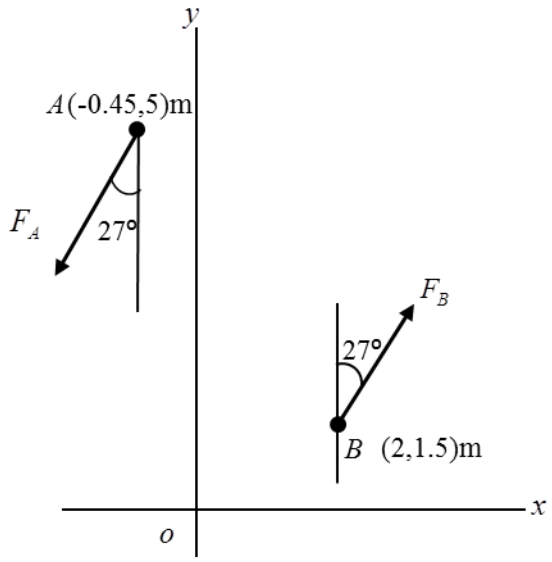
6. The distribution of the force at point B is $F_B \sim N(4.5, 0.2^2)$ kN, determine the distribution of the couple moment.



Solution

At point A,

$$\curvearrowleft +M_C = F_B \cos 27^\circ (2 + 0.45) + F_B \sin 27^\circ (5 - 1.5) = 3.78 F_B$$

Given the distribution $F_B \sim N(4.5, 0.2^2)$ kN, we find μ_{M_C} and σ_{M_C} as follows:

$$\mu_{M_C} = 3.78 \mu_{F_B} = 3.78(4.5) = 16.97 \text{ kN}\cdot\text{m}$$
$$\sigma_{M_C} = 3.78 \sigma_{F_B} = 3.78(0.2) = 0.75 \text{ kN}\cdot\text{m}$$

The distribution of M_C is $M_C \sim N(16.97, 0.75^2)$ kN·m. ↻ **Ans.**