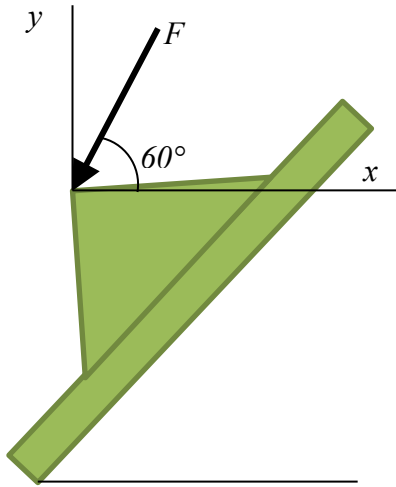16. Determine x- and y components of $F \sim N(1000, 20^2)$ N.

Solution

We know the force $F \sim N(1000, 20^2)$ N, thus

$$\mu_{F_x} = -\mu_F \cos 60° = -500 \text{ N}$$

$$\sigma_{F_x} = -\sigma_F \cos 60° = -10 \text{ N}$$

$$\mu_{F_y} = -\mu_F \sin 60° = -866.03 \text{ N}$$

$$\sigma_{F_y} = -\sigma_F \sin 60° = -17.32 \text{ N}$$

Therefore, $F_x \sim N(-500, -10^2)$ N and $F_y \sim N(-866.03, -17.32^2)$ N.