2-1. The initial velocity of the 100-kg block is $v_0 = 5$ m/s, and its initial position is $s_0 = 2$ m. If a normally distributed force $P \sim N(500, 50^2)$ N is applied to the block, determine the distributions of the position and velocity of the block when $t = 5$ s. Assume the coefficient of kinetic friction between the block and the ground is $\mu_k = 0.3$.

Solution: $v \sim N(13.27, 1.77^2)$ m/s, $s \sim N(47.66, 4.42^2)$ m