

2-21. When $t = 0$, the 100-kg block moves to the right with a normally distributed velocity $v_0 \sim N(1, 0.1^2)$ m/s. Then a force $F \sim N(1000, 100^2)$ N is applied to the block. If F and v_0 are independent, find the velocity distribution of the block after 2 seconds. The coefficient of kinetic friction between the block and the floor is $\mu_k = 0.5$.

Solution: $v \sim N(3.51, 1.24^2)$ m/s.

