2-15. Due to manufacturing uncertainties, the mass of the ball and the allowable tension of the rope are two independent normal random variables, $m \sim N(5, 0.5^2)$ kg and $T_A \sim N(55, 2^2)$ N. At the instant $\theta = 90^\circ$, the ball has a speed $v = 1$ m/s. If the mass of the rope and the size of the ball are negligible, what is the probability that the rope breaks?

Solution: The probability of failure is 0.32.