

1. An impact system has a spring constant $k = 180$ lbf/in and a weight $W \sim N(50, 5^2)$ lbf. The system is dropped from $h \sim N(3, 0.2^2)$ in. If W and h are independent, determine the mean and standard deviation of the maximum spring force using the First Order Second Moment Method. Ignore the mass of the spring.

Answer: $\mu_{F_{max}} = 287.70$ lbf, $\sigma_{F_{max}} = 18.99$ lbf

