1. Give an explicit formula for a sequence s_n which has properties that $s_1 = 2$, $\lim_{n\to\infty} s_n = 1$, and $s_n < 1$ for some values of n. What are the first four terms in your sequence? (4 points)

2. A daring calculus-loving student leaps from a tree-house located 15 feet above the surface of a trampoline. She then bounces on the trampoline 10 times, attaining a height after each bounce that is $\frac{1}{2}$ her previous height. **(a)** write a series giving the total vertical distance she travels after the first bounce from the trampoline (assume that she comes to a stop upon landing on the trampoline for the 10th time), and **(b)** determine its sum. (4 points)

3. Give an integral that could be used to test the convergence of $\sum_{n=0}^{\infty} (n-2)e^{-(n-2)}$. Without evaluating the integral, how would it tell you if the series converges or not? (3 points)