1) (3 pts) Use the trapezoidal codes we examined in class to estimate the value of

$$\int_0^2 x^4 e^{-x}\, dx.$$

In particular, determine the value of n necessary for the relative error to be less than 10^{-6}. You do not have to find the exact value of n that works, but you should be close. You should not just input something like $n = 5,000,000$. Also, note that a relative error of $9.12345 \cdot 10^{-6}$ is not less than 10^{-6}. You need something like $9.12345 \cdot 10^{-7}$.

2) (3 pts) Repeat Question 1, but change the problem to

$$\int_0^{4\pi} e^{-x/10} \sin(10x)\, dx.$$

Why is the value of n necessary to obtain the desired accuracy so different than in Question 1? Hint: Graph this function.