APPM 1360 **Name:** _____
Spring 2022
Quiz 2
02/01/2022
Time Limit: 10 Minutes Recitation Section: _____

$$T_n = \frac{\Delta x}{2}\left[f(x_0) + 2f(x_1) + \cdots + 2f(x_{n-1}) + f(x_n)\right], \quad \Delta x = \frac{b-a}{n}$$

$$M_n = \Delta x\left[f(\overline{x}_1) + \cdots + f(\overline{x}_n)\right], \quad \Delta x = \frac{b-a}{n}, \quad \overline{x}_i = \frac{x_{i-1} + x_i}{2}$$

1. (10 points) Let $f(t) = e^{t^2}$.

   (a) Draw a graph of $f(t)$ on the interval $[0, 4]$.

   (b) On the same graph, draw the trapezoids corresponding to T_2, the trapezoidal rule approximation of $\int_0^4 f(t)\mathrm{d}t$.

   (c) Calculate T_2. Leave your answer in terms of powers of e.

   (d) Is T_2 an underestimate or overestimate of $\int_0^4 f(t)\mathrm{d}t$?