Let $\mathcal{I} = \displaystyle\int_{-\pi}^{\pi} e^{\sin(x)} \, dx$.

Approximate $\mathcal{I}$ accurate within

1. 0.001 using a trapezoid sum

2. 0.0001 using a midpoint sum

Let $\mathcal{I} = \displaystyle\int_{-1}^{1} x \sin(x^3) \, dx$

1. Plot the integrand to verify that it is concave up over the interval of integration.

2. Will M_n overestimate or underestimate $\mathcal{I}$? How about T_n?

3. Calculate M_{100} and T_{100}.

4. Use # 3 to determine how close T_{100} is to the actual value of $\mathcal{I}$.

5. What does Theorem 7.1 tell you about $|\mathcal{I} - T_{100}|$?

6. Compare your answers to the last two questions. Explain.