Let $I = \int_0^2 e^{x^2}\, dx$.

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

2. Use Maple to calculate L_{100} and R_{100}. How close are these to the actual value of I?

3. Calculate L_{1500}. How close is this to the actual value of I?

4. Use Theorem 3 to find a value for n such that $|I - L_n|$ is guaranteed to be less than 0.10. How does this compare to part 3? Explain.

5. Will M_{100} overestimate or underestimate I? How about T_{100}?

6. Calculate M_{100} and T_{100}. How close are these to the actual value of I?

7. What does Theorem 3 tell you about $|I - M_{100}|$?