Let $I = \displaystyle\int_{-2\pi/3}^{\pi/4} \sin(x^2)\,dx$.

1. Find n so that L_n approximates I within 0.001 of its actual value.

2. Find n so that T_n approximates I within 0.001 of its actual value.

3. Find n so that M_n approximates I within 0.001 of its actual value.

4. Which would you rather do?

Recap for Today

- The error introduced by T_n and M_n when approximating $\displaystyle\int_a^b f(x)\, dx$ is related to the magnitude of $f''(x)$ on $[a, b]$.

- Although it's more work to use Theorem 3, the error introduced by M_n and T_n is usually less than the error introduced by L_n and R_n, especially if f'' is well-behaved on $[a, b]$.