

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

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 $\int_a^b f(x) dx$ 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 $[a, b]$.