

Let $\mathcal{I} = \int_0^1 x \sin(x^2) dx$

1. Calculate L_4 by hand. Does this overestimate or underestimate \mathcal{I} ?
2. Write L_{10} using sigma notation.
3. Use Maple to draw and to calculate L_{10} and R_{10}
(use the *Tools – Tutors – Calculus Single Variable – Approximate Integration* menu.)
4. How does \mathcal{I} compare to L_{10} and R_{10} ?
5. Find a value of n so that L_n and R_n approximate \mathcal{I} accurate within 0.01. How are you certain that your value of n is correct?