Let 
$$I = \int_{1}^{\infty} \frac{7}{\sin(x)^2 + x^3} \ dx$$
.

- 1. Show that *I* converges.
- 2. Find an upper bound for  $I_2 = \int_6^\infty \frac{7}{\sin(x)^2 + x^3} dx$ .
- 3. Approximate  $I_1=\int_1^6 \frac{7}{\sin(x)^2+x^3} \ dx$  using  $M_{1000}$ . How close is this approximation to the exact value of  $I_1$ ?
- 4. How close is your value for  $M_{1000}$  to the actual value of I?

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