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?