Project 3. Comparing Two Integration Algorithms

Part 1. Due Monday.

(a) Write a program that computes the integral of $f(x) = t^3$ for t ranging from 0 to 1. Use N steps where N can be entered by the user. Use the left rectangle method.

(b) (@) Repeat but use the midpoint method.

(c) Write a program that normalizes the wavefunction $\psi(x) = A sin(\pi x)$ for $(0 < x < 1)$ and zero otherwise. Your program should print out the value of A. Even though you could do this integral by hand, use either the midpoint or left rectangle method. Of course, you might want to do this by hand anyway to check your answer.