PROJECT 2: Monte Carlo Integration

Give a class presentation, of at least 15 minutes, of how to do Monte Carlo integration for one dimensional integrals. (Monte Carlo methods are typically used for integrals over many variables, but it is best to keep an introduction simple.)

You should explain the ideas behind using random numbers to evaluate an integral and you should explain both straightforward Monte Carlo evaluation (using a uniform distribution of the integration variable) and Monte Carlo integration using "importance sampling."

You can find many web articles on the subjects.

You should write a program that evaluates an integral both using the straightforward Monte Carlo method, and the method with importance sampling. In this program the user should specify the number of points to be used.

You should distribute your program to everyone in the class, and use it as a demonstration during your presentation.