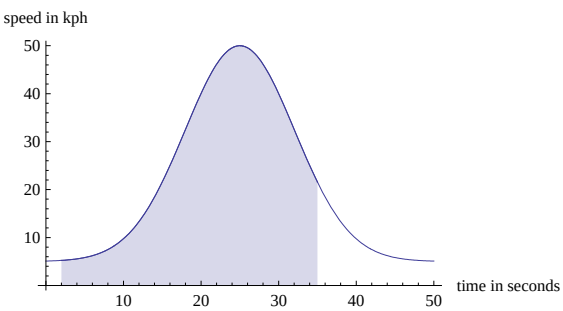
MA205, Homework 1: 25 points

- This homework is due on Friday, 7 September 2007 at the start of class.
- Turn in a title page with name, section, and new documentation policy statement along with your work. You do not need to use a brown bomber.
- The following assignment is individual graded homework in that every keystroke you turn in is from you. DO NOT CUT AND PASTE other code into the computer. You can use whatever code you find and copy exactly, but YOU MUST TYPE IT YOURSELF. You need not document Schaum's or anything that I have sent you. Only let me know where you received your help.
- This assignment is to be completely executed in Mathematica and your submission will be a print out of your executed homework file to show graphs and plots (if applicable).

1. **[10 pts]** Major Bowman is heading up the hill by Michie Stadium in his 1965 Mustang. He wants to see how fast he can go up the hill. As he got to about 55 kph he remembered that the MPs sit at lot D to catch speeders. He then slowed down as fast as possible. Using Mathematica code from Lesson 4, estimate the distance he traveled using the Left-Endpoint Rule, Right-Endpoint Rule, Midpoint Rule, and the Trapezoidal Rule by using four increments (n=4), 16 increments, and 256 increments.

$$f(x) = 45e^{-(\frac{x-25}{10})^2} + 5 \qquad a = 2 \qquad b = 35$$



2. **[5 pts]** Compute the definite integral for f(x) from above using Mathematica. Which method, from number 1, is the most accurate (closest to the value of the definite integral) when using 16 increments (n=16)?

3. **[10 pts]** Using Mathematica compute and define G(y) as the indefinite integral of the following function:

$$g(y) = \tan(y + 8)$$

Compute G(3) and G(8). What does the following equal in terms of G? Why?

$$\int_3^8 \tan(y + 8)dy = ?$$