Math 181, Calculus II   **Hour Exam One**

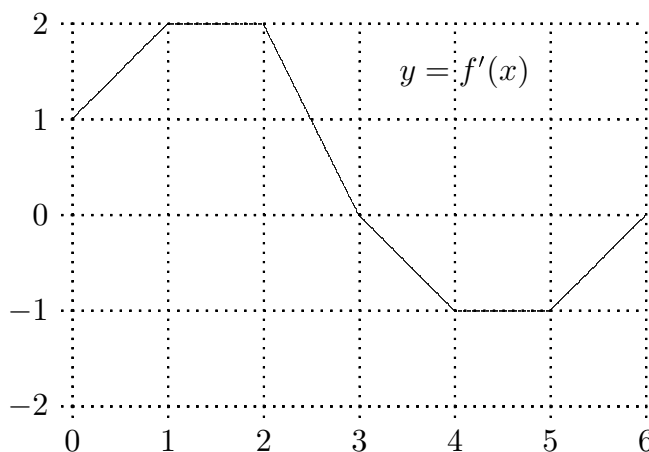**8:00 am Lecture**   **February 9, 1996**

Evaluate each of the following integrals and show all work:

1. $\displaystyle\int \frac{\sqrt{1+\ln x}}{x}\,dx.$

2. $\displaystyle\int xe^{-2x}\,dx.$

3. $\displaystyle\int \frac{1}{x^2+6x+12}\,dx.$

4. The figure shows the graph of $f'(x)$.

It is given that $f(0) = 2$.

  (i) What is $f(2)$? Explain how you get your result.

  (ii) What is $f(6)$?

  (iii) For what value of x in the range $0 \le x \le 6$ is $f(x)$ largest? Explain why this is so.

5. A car moving with constant acceleration accelerates from 45 mph to 60 mph in 4 seconds. Note: 1 mph $= \frac{22}{15}$ ft/sec.

  (i) What is that acceleration?

  (ii) How far did the car travel during those 4 seconds?

6. If $f'(x) = \cos(x)(\sin(x))^{1/3}$ and $f(0) = 1$, find $f(x)$.