Math 150 Quiz 9 Fall 2010

Name: _____

CALCULATORS ALLOWED

1. [15 points] Graph $f(x) = \int_0^x g(t)\,dt$, where $g(t)$ is given by the graph below and answer these questions.

   On the interval $(4, 6)$ is your graph is concave up or concave down?
   What is $f(6)$?
   What is $f'(2)$?
   What is $f'(5)$?
   What is $f''(5)$?

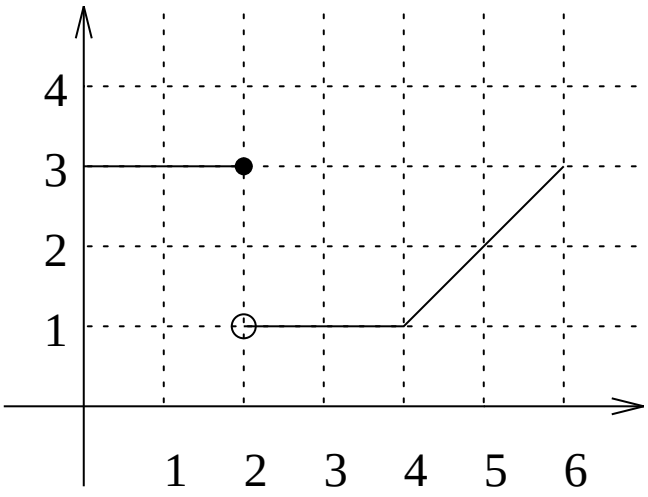

Figure 1: Graph of $g(t)$

2. [10 points] Set up the Riemann sum to approximate the area between $y = \ln x$ and the x-axis between $x = 1$ and $x = 3$ with $n = 6$ using **right end points**.

   What is Δx? What are the values of x_0, x_1, etc.?

   Evaluate the sum to three decimal places.

3. [5 points] Let $h(x) = \int_0^{x^3} \sin(t^2)\, dt$. Find $\frac{dh}{dx}$.

4. [5 points] Compute $\int x^4 + \sqrt{x} + \frac{1}{x^2} + 2^x + \sinh x \; dx$