Math 125H - Winter 2002
First Mid-Term Exam
January 29, 2002

Name _____ Section _____

1	10	
2	5	
3	10	
4	10	
5	5	
6	20	
7	20	
8	20	
Total	100	

- Complete all questions.
- You may not use electronic calculation devices during this examination.
- Show all work for full credit.
- You have 50 minutes to complete the exam.

1. Suppose $g(x) = \int_x^{x^2} \sin(t^2)\,dt$. Find $g'(x)$.

2. Evaluate
$$\int_0^3 2x + \sqrt{9 - x^2}\,dx$$
by interpreting it in terms of area.

3. A table of values of an increasing function f is shown. Using the table, give the best possible lower and upper estimates for
$$\int_{10}^{30} f(x)\,dx.$$

x	0	5	10	15	20	25	30	35	40
$f(x)$	0	7.9	9.4	12.1	21.1	27.7	28.4	32.7	42.1

4. Suppose $g''(x) = 6x - 4, g'(0) = 1$, and $g(1) = -1$. Find $g(x)$.

5. Write the following difference as a single integral of the form $\int_a^b f(x)\,dx$.

$$\int_2^{10} f(x)\,dx - \int_6^{10} f(x)\,dx$$

6. Evaluate the integrals.

   (a) $\int (1-t)(2-t)\,dt$

   (b) $\int_1^5 |4-2x|\,dx$

7. Evaluate the integrals.

   (a) $\int 5x\sin(x^2+3)\,dx$

   (b) $\int x^2(1+\sqrt{x})\,dx$

8. Evaluate the integrals.

   (a) $\int \dfrac{2}{(1+3t)^2}\,dt.$

   (b) $\int x\sqrt{3x-2}\,dx.$