Name: _____

4-digit code: _____

- Write your name and the last 4 digits of your SSN in the space provided above.
- The test has four (4) pages, including this one.
- You have fifty (50) minutes to complete the exam.
- Enter your answer in the box(es) provided.
- You must show sufficient work to justify all answers unless otherwise stated in the problem. Correct answers with inconsistent work may not be given credit.
- Credit for each problem is given in parentheses at the right of the problem number.
- No books, notes or calculators may be used on this test.

Page	Max. points	Your points
2	40	
3	30	
4	30	
-	100	

Problem 1 (10 pts)**.** Find an antiderivative $F(x)$ of the function $f(x) = x^2 - x + 1 - \frac{1}{x} + \frac{1}{\sqrt{x}}$ that satisfies $F(1) = 5$.

Problem 2 (10 pts each)**.** Compute the following integrals:

(a) $\int \frac{dx}{\sqrt{6x}}$

(b) $\int_0^1 2^x - 5e^x \, dx$

(c) $\int_0^1 (x^2 + 3)^3 \, dx$

Problem 3 (5 pts each)**.** Given the following sequences, find the next two elements, and the general term:

(a) $-\frac{1}{2}, \frac{1}{3}, -\frac{1}{4}, \frac{1}{5}, -\frac{1}{6}, \ldots$

(b) $\frac{1}{2}, \frac{3}{4}, \frac{6}{8}, \frac{9}{16}, \frac{12}{32}, \ldots$

Problem 4 (10 pts each)**.** Compute the following:

(a) $\displaystyle\sum_{k=1}^{50}(3k^2 - 7k + 1)$

(b) $\displaystyle\lim_{n\to\infty}\sum_{k=1}^{n}\frac{2}{n}\left(\frac{2k}{n}\right)^3$

Problem 5 (10 pts each)**.** Estimate the area under the graph of $f(x) = 8 + 2x^2$ from $x = -1$ to $x = 2$ using three rectangles:

(a) Using right endpoints.

(b) Using left endpoints.

(c) Using midpoints.