Name:	
VIP ID:	

- Write your name and VIP ID in the space provided above.
- The test has four (4) pages, including this one.
- You have seventy-five (75) 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, or notes may be used on this test. An approved calculator may be used.

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

Problem 1 (10 pts each). Compute the following integrals:

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



(b)
$$\int (2^x - 5e^x) dx$$



(c)
$$\int \frac{31x^2 - 12x + 5}{x} dx$$



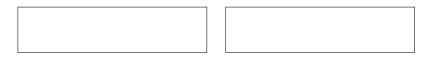
(d)
$$\int (2\sin x - 3\cos x) \, dx$$

Problem 2 (5 pts each). Given the following sequences, find the next two elements, and the general term:

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



(b)
$$\frac{1}{2}, \frac{3}{4}, \frac{6}{6}, \frac{9}{8}, \frac{12}{10}, \dots$$



Problem 3 (10 pts each). Compute the following:

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



(b)
$$\lim_{N \to \infty} \frac{2}{N^4} \sum_{n=1}^{N} 8n^3$$



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

(a)
$$\int_0^\pi (2\sin x - 3\cos x) \, dx$$

(b)
$$\int_0^2 (x^2+3)^2 dx$$

Problem 5 (10 pts). Find the area and signed area of the region bounded by the graph of the function $y = \frac{2x}{x^2 + 2}$ and the x-axis, over the interval $-2 \le x \le 2$.