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) $\displaystyle\int \frac{dx}{6\sqrt{x}}$

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

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

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

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) $\displaystyle\int_0^{\pi} (2\sin x - 3\cos x)\, dx$

(b) $\displaystyle\int_0^{2} (x^2+3)^2\, dx$

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