Math 142, Exam 2, Spring 2016

Write everything on the blank paper provided. **You should KEEP this piece of paper.** If possible: return the problems in order (use as much paper as necessary), use only one side of each piece of paper, and leave 1 square inch in the upper left hand corner for the staple. If you forget some of these requests, don't worry about it – I will still grade your exam.

The exam is worth 50 points. Please make your work coherent, complete, and correct. Please $\boxed{CIRCLE}$ your answer. Please **CHECK** your answer whenever possible.

No Calculators or Cell phones.

1. (9 points) Find $\displaystyle\int \frac{-x^2+3x+1}{x(x^2+1)}dx$. **Please check your answer.**

2. (9 points) Find $\displaystyle\int \frac{1}{x^2+6x+10}dx$. **Please check your answer.**

3. (8 points) Find $\displaystyle\int_{-1}^{3} \frac{1}{(x-2)^2}\,dx$.

4. (8 points) Find $\displaystyle\int \sin 3x\,\cos 4x\,dx$.

5. (8 points) Find the limit of the sequence whose n^{th} term is $a_n = (\frac{n}{n+3})^n$.

6. (8 points) Write the repeating decimal $1.42\overline{973} = 1.42973973973\ldots$ as the ratio of two integers.