Math 142, Exam 3, Fall 2015

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. Each problem is worth 10 points. Please make your work coherent, complete, and correct. Please $\boxed{CIRCLE}$ your answer.

No Calculators or Cell phones.

1. Find $\int \frac{-x^2+6x-3}{(x-1)^3}dx$. **Please check your answer.**

2. Find $\int_1^7 \frac{dx}{(x-3)^2}$. **Please draw a meaningful picture.**

3. Find the volume of the solid which is obtained by revolving the region bounded by $x = y^2$ and $y+x = 2$ about the line $y = -5$. **Please draw a meaningful picture.** It is not necessary for you to do the integral.

4. What is the limit of the sequence whose n^{th} term is $a_n = (\frac{n-3}{n})^{4n}$. **Please explain your answer.**

5. Please express the repeating decimal $d = 2.1497979797\ldots$ as a ratio of two integers. **Please explain your answer.**