Math 142, Exam 1, 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. Please **CHECK** your answer whenever possible.

No Calculators or Cell phones.

1. Find $\int \sin^4 x \cos^5 x dx$. **Please check your answer.**

2. Find $\int e^{4x} \sin x dx$. **Please check your answer.**

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

4. Find the area between $y + x^2 = 8$ and $x + y = 6$. **Please draw a meaningful picture.**

5. Consider the solid whose base is bounded by $\frac{x^2}{9} + \frac{y^2}{16} = 1$ in the xy-plane. Each cross section of the solid perpendicular to the y-axis and perpendicular to the base is a square. Find the volume of the solid. **Please draw a meaningful picture.**