Math 142, Exam 2, Fall 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.

The solutions will be posted later today. The quiz on Wednesday will be one problem from this exam.

No Calculators or Cell phones.

(1) (9 points) Find $\int \cos^5 x \, dx$. **Please check your answer.**

(2) (9 points) Find $\int \cos^4 x \, dx$.

(3) (8 points) Find $\int \dfrac{dx}{4x^2 + 8x + 13}$. **Please check your answer.**

(4) (8 points) Find $\int \dfrac{5x^3 + 3x + 1}{(x^2 + 1)x^2} \, dx$. **Please check your answer.**

(5) (8 points) Find $\int_2^\infty \dfrac{1}{x^2} \, dx$.

(6) (8 points) Consider the sequence described by $a_1 = 1$, $a_2 = 1$, and $a_{n+2} = a_{n+1} + a_n$, for $1 \leq n$. Write the first 8 terms of this sequence.