**Math 107H Practice problems for exam 1**

**Show all work.** How you get your answer is just as important, if not more important, than the answer itself.

Note that "$\int_0^x f(t)\,dt + c$" as an answer to "Find the antiderivative of $f(x)$" will not get you much credit...

**Find the following integrals:**

1. $\displaystyle\int_0^1 (3x+1)^{2/3}\,dx$

2. $\displaystyle\int x(x+1)^{2/3}\,dx$

3. We know two different substitutions which will enable us to find the integral
$$\int \sec^4 x \tan^5 x\,dx\ .$$
Show how to do both.

4. $\displaystyle\int \frac{dx}{x\sqrt{x^2+1}}$

5. $\displaystyle\int \frac{x^2\,dx}{(x-2)(x^2+1)}$

6. $\displaystyle\int \mathrm{Arcsin}(x)\,dx$

7. $\displaystyle\int \frac{x^2}{\sqrt{1-x^2}}\,dx$

8. $\displaystyle\int_0^1 \frac{x^2}{x^2+1}$

9. $\displaystyle\int_1^3 \frac{x}{(x+1)(x+5)}$

Solutions to (some of) these problems can be found on the class webpage, filed under "exams":

http://www.math.unl.edu/~mbrittenham2/classwk/107f10/