Math 263B **Guide for Test 2**

Here are some sample questions from sections 5.5, 6.1–6.3. Some topics that we covered are not represented by these questions, but are still fair game.

1. Evaluate each of the following integrals. A method is suggested, but you may use another method if you prefer.

   (a) Rules/algebra: $\displaystyle\int_2^5 \frac{x^2 - 3}{x}\, dx$

   (b) Substitution: $\displaystyle\int_3^4 xe^{x^2}\, dx$

   (c) Parts: $\displaystyle\int_0^1 xe^{2x}\, dx$.

   (d) Partial Fractions: $\displaystyle\int_9^{10} \frac{5}{(x+1)(x+3)}\, dx$

2. Evaluate each of the following integrals by a method of your choice.

   (a) $\displaystyle\int x^2 e^x\, dx$

   (b) $\displaystyle\int x\ln(x)\, dx$

   (c) $\displaystyle\int \frac{\ln(x)}{x}\, dx$

   (d) $\displaystyle\int x^2\sqrt{x-2}\, dx$

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

   (f) $\displaystyle\int_{-2}^{-1} (5x+3)e^{7x+11}\, dx$

   (g) $\displaystyle\int_0^1 x\sqrt{x^2+1}\, dx$

   (h) $\displaystyle\int_1^2 \frac{dx}{(x-1)^2}$

   (i) $\displaystyle\int \frac{7}{x^2-1}\, dx$

   (j) $\displaystyle\int \tan^3(x)\sec(x)\, dx$

   (k) $\displaystyle\int \frac{x+4}{x^2+2x+5}\, dx$