MA121, Homework #5

due Thursday, Feb. 5 in class

1. Compute each of the following integrals:

 $\int \frac{8x-5}{2x^2-3x+1} \, dx, \qquad \int \log(x^2-1) \, dx.$

- **2.** Define a sequence $\{a_n\}$ by setting $a_1 = 1$ and $a_{n+1} = \sqrt{2a_n + 1}$ for each $n \ge 1$. Show that $1 \le a_n \le a_{n+1} \le 3$ for each $n \ge 1$, use this fact to conclude that the sequence converges and then find its limit.
- **3.** Compute each of the following integrals:

$$\int x^2 \sin x \, dx, \qquad \int \sin(\log x) \, dx$$

- You are going to work on these problems during your Friday tutorials.
- When writing up solutions, write legibly and coherently. Use words, not just symbols.
- Write both your name and your tutor's name on the first page of your homework.
- Your tutor's name is Thomas, if you are a TP student; otherwise, it is Pete.
- Your solutions may use any of the results stated in class (but nothing else).
- NO LATE HOMEWORK WILL BE ACCEPTED.