Math 190 Homework 10: Due Monday November 28

The assignment is due at the beginning of class on the due date. You are expected to provide full solutions, which are laid out in a linear coherent manner. Your work must be your own and must be self-contained. Your assignment must be stapled with your name and student number at the top of the first page.

Questions:

1. Compute the following integrals
   (a) $\displaystyle\int \frac{\cos x}{\sin x} dx$
   (b) $\displaystyle\int e^x \sin\left(2 + e^x\right) dx$
2. Compute the following integral
$$\int \left(x^2 - 2\right) \sqrt{x+1} dx.$$
   (If you're lacking inspiration see the note from November 16.)
3. A function is called *odd* if
$$f(-x) = -f(x)$$
   for all values of x.
   (a) Using a picture, explain why you suspect that
$$\int_{-a}^{a} f(x) dx = 0$$
   (b) Prove using a substitution that
$$\int_{-a}^{a} f(x) dx = 0$$
   for any odd function $f(x)$ and any value of a.
4. Compute the following definite integral
$$\int_{-\pi}^{\pi} x \cos\left(x^2\right) dx.$$
   Explain, in reference to Question 3, why you expected this result.
5. Evaluate the following indefinite integral
$$\int \frac{\sin x \left(\cos x + 1\right)}{\cos x} dx.$$