## Homework #0 • MATH 314 • Think PDEs!

- **because of snow day, submit all hw00 work at the 13 January tutorial.**

- submit a paper copy of your writing in the Friday 09 January lecture, webct-posting may appear later that evening.
- a link to a matlab computing text is available from the class webpage.
- part **B)** is due in tutorial on Tuesday 13 January.
- **please attach another copy of the student info sheet to your part A) submission**.

**A) Think PDEs!** (1 page, due Friday 09 January) Discover a personal interest in PDEs by researching a topic of individual choice and writing a short two-paragraph essay. The topic can really be anything which raises awareness of a PDE with context. For instance: a scientific phenomenon (quantum states of a hydrogen atom), a biography (P.-S. Laplace, S. Kovalevsky), or a current socio-scientific concern (global warming). **Creativity counts.** Present an example PDE for your topic, and discuss how the equation contributes to our understanding (be as specific as you can). Give references; they can be either print, or web-based (please verify accuracy). You should try to include at least one image. Be prepared to announce your topic in the Friday 09 January lecture.

Post your essay on the web by attaching a link/copy to a posting on the webct *Think PDEs!* discussion group. The subject line should contain your PDE topic.

**B) Line Plots in Matlab** (1 page, due in tutorial Tuesday 13 January) Matlab is a computing environment which allows both interactive use and pre-programmed scripts. Plotting is simple. As a first example, download *hw00code.m* from the class webpage. It is a script which reproduces the line plots shown in Figure 9.3 (p299, for examples 9.6 & 9.8 in T&W) for $S_{2N-1}(x)$. Play around by editing the file *hw00code.m* to see how it works. If you mess up the file, just download a new copy! Make the very minor modifications to reproduce the line plots shown in Figure 9.2 (p298, for examples 9.5 & 9.7 in T&W) for $S_N(x)$.