

Math 421:03

Get
five extra points
on the final exam!

November 23, 2004

The homework assignment for Tuesday, November 30, follows.

Read 12.5 and 13.1–3. Hand in these problems: 12.5:1; 13.1: 3,5; 13.2: 3; 13.3: 1,4.

Extra credit

Pictures of a heat flow example along with the necessary **Maple** code were distributed in class on November 14. That handout is also available on the web. That example deals with the initial condition (for $0 \leq x \leq \pi$) $F(x) = \mathcal{U}(x - \frac{\pi}{3}) - \mathcal{U}(x - \frac{\pi}{2})$. It is a block of height 1 in the interval $[\frac{\pi}{3}, \frac{\pi}{2}]$ and is 0 otherwise. The boundary conditions there are temperature 0 at both ends.

To earn 5 points on the final exam Please hand in on Tuesday, November 30, similar pictures with the same initial condition but with the “insulated ends” boundary condition. This should be pictures of the 100th partial sum of the solution to $u_t = u_{xx}$ where $u(x, 0) = F(x)$ (the same $F(x)$!) and with $\frac{\partial u}{\partial x}(0, t) = 0$ and $\frac{\partial u}{\partial x}(\pi, t) = 0$ for all $t \geq 0$. I would like six pictures of $u(x, t)$, each with $0 \leq x \leq \pi$: $t = 10^{-4}$ and $t = 10^{-3}$ and $t = 10^{-2}$ and $t = 10^{-1}$ and $t = 10^0$ and $t = 10^1$. Please print the pictures and give them to me on Tuesday. Please *don't* send them by e-mail (but you may ask me questions by e-mail).