

## Math 530, Spring 2009

### Project 2

**Preliminary due April 8, Final report due April 15.**

Develop a model for heating/ cooling a house, based on the objectives to keep the inside temperature in a desired range.

Two interesting models to compare are:

- a) adobe walls (e.g. thick walls will lead to the "phase shift" effect).
- b) Insulated walls (these are typically materials with low heat capacity and low thermal conductivity).

(you are to determine the necessary constants from actual materials used in construction).

**Add-ons** (these are just some suggestions). Consider other factors that lead to heat gain/loss: windows/doors, roof, solar radiation etc. Consider how heating/cooling costs change when you vary the desired temperature range. Consider weather variability typical for New Mexico.