

Math 330 Reading Questions

Section 4.1

NAME

Read pages 121–126 in the textbook and answer the following questions. This sheet will be collected at the beginning of the next class. Your responses will be graded for completeness.

1. What three fundamental physical principles underlie the heat equation?
2. What is $\kappa(x)$, and why does it appear with a minus sign in equation (4.5)?
3. What is a *Dirichlet boundary condition*?
4. How is the *heat equation* a simplified version of the *linear diffusion equation*?
5. A separable solution to the heat equation is a solution of what form?
6. Example 4.1 gives a solution to the heat equation, plotted in Figure 4.1. Describe how this solution changes as time increases.