

1. K&K, chapter 14, problem 5.
2. You may recall that I mentioned the (thermal) diffusivity for an insulating solid might be the speed of sound in the solid times the distance between atoms. Look up the thermal conductivity, specific heat (you will probably need specific heat at constant pressure for a solid), density, speed of sound, and whatever else you need for an insulating (non-metallic) solid. Calculate the thermal diffusivity. Calculate the speed of sound times the distance between atoms. Are your two numbers of the same order? Hint: you may be able to find some interesting data on the web. A cool starting point might be

<http://www.webelements.com/>

3. K&K, chapter 15, problem 3.
4. K&K, chapter 15, problem 4.
5. K&K, chapter 15, problem 6. In this problem you are being asked to find the temperature distribution in the cylinder or sphere that results in a steady state. (So $\partial\tau/\partial t = 0$.) Then the boundary condition at the surface is that the rate of heat flowing out of the surface must be the rate of heat generated within the volume.