

MECH 151 HT homework Spring, 2010

1. Solve problem 13.6. Download `rodtkm.m` which is incomplete. You may use `housewall.m` from the web site as a guide. As in that example, plot  $T$  vs. position and  $q$  vs. position.
2. Solve problem 13.34. Most of it is done for you in `p13p34.m`. Answer the following:
  - (a) Experiment with the mesh size until you are satisfied. Remember the engineering principle “good enough is good – enough.”
  - (b) Do the flux arrows point in the expected directions at boundaries? What’s the problem in the upper left corner? What about the right edge?
  - (c) Reduce  $T_\infty$ . What happens to the total convection loss? What about the flux direction on the right side? Do the results make sense?