

Ph 161 Black Holes

Homework Assignment 3

Due Tuesday, February 14, 2006

This should be your own work; do not copy problem solutions.

(1.) Hartle Chapter 7: problem 9. This is what we discussed in class on Tuesday. Explicitly write out the Taylor expansion involved and show your arguments for the number of degrees of freedom in both the coordinate transformation and the metric. Comment on how the second derivatives of the metric which cannot be set to zero in general are related to tidal forces.

(2.) Hartle Chapter 8: problem 2.

(3.) Hartle Chapter 8: problem 3.