

AME 538

Homework 24

Due: Monday, 3 November 2000, in class

1. Consider the steady, two-dimensional Euler equations (that is the Navier-Stokes equations in the limit of $\mu \rightarrow 0$, $k \rightarrow 0$) for a homentropic flow of a calorically perfect ideal gas. Using the method developed in class, write cast these partial differential equations as a set of ordinary differential equations which are valid along characteristics. What are the conditions for the characteristics to be real?