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18.306 Advanced Partial Differential Equations with Applications
Fall 2009

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Lecture 11 2009 10 14 WED

TOPICS: The Riemann problem for the kinematic wave equation
with convex/concave flux.

Example of a conservation law with a point source term.

Riemann problem for: $u_t + Q(\rho)_x = 0$

Case Traffic Flow Q concave

Case River Flows Q convex

Example: Riemann problem for $u_t + (0.5*u^2)_x = \delta(x)$.

Give meaning to equation as a conservation law.

Point source term at the origin implies there is a discontinuity
there, and appropriate jump conditions must be given, restricted
by the need for causality.