Recitation 1 (9/12/2002) Outline

Einstein index notation
o Summation convention
o Range convention
o Comma convention

Review of vector analysis
o Cartesian coordinates/base vectors
o Dot and cross products
o Divergence, gradient, curl
o Laplacian operator
o Material derivative
o Divergence Theorem (very important)
o Other coordinate systems . see handout, Hildebrand Advanced Calculus (Ch. 6)

Physical meaning of the material derivative . example problem

Examples of streamlines, pathlines, streaklines