Fall 29 '7 (KCP)

Lecture 2 on Vectors & Tensors

- Why do we need vectors?
  - positions, displacements, deformations, forces, and moments are expressed in vectors.

- Why do we need tensors?
  - position transformations
  - stress & strain transformations
  - stretch & rotations

  } are expressed in terms of tensors

- Most important of all, governing equations in a frame or coordinate system remain valid in another frames & coordinate systems. For example, 3-D elasticity equations derived in a Cartesian frame can be transformed into the corresponding equations via vector & tensor transformations.