
Math 224
Daily Objectives
Class Session 2
Thursday, August 30, 2007

A. 1.3: Matrices and their Algebra

- The notation $Ax = b$ for linear systems
- The notion of an $m \times n$ matrix; $A = [a_{ij}]$
- Matrix multiplication (Def. 1.8)
- When is matrix multiplication defined?
- Is matrix multiplication commutative? If so, prove it, and if not, give a counterexample.
- Identity matrix
- Diagonal matrix; main diagonal
- Matrix addition
- Zero matrix
- Multiplication of a matrix by a scalar
- Transpose of a matrix
- Symmetric matrix
- Properties of Matrix Algebra (p. 45)
- Properties of the Transpose Operation (p. 45)
- Know how to work with matrices in Maple

B. 1.4: Solving Systems of Linear Equations

- $Ax = b$; coefficient matrix A
- Augmented matrix
- 3 Elementary row operations
- Invariance of solution sets under elementary row operations (Thm. 1.6)
- Row-echelon form (2 conditions, Def. 1.12)
- Pivot: the first nonzero entry in a row in row-echelon form
- Procedure for row-reducing a matrix A (by hand) to row-echelon form H (3 steps, p. 60)
- Know how to solve a linear system by hand using Gauss reduction with back substitution (reducing the coefficient matrix A to row echelon form and back-substituting)