MATH 2418

Exam 2 Reviews

4.2

Projections

**Book**

Chapter main points

1. The projection of vector b onto the line through a is the closest point p = a (aTb / aTa)
2. The error e = b -p is perpendicular to a: Right triangle b p e has ||p||2 + ||e||2 = ||b||2
3. The projection of b onto a subspace S is the closest vector p in S; b – p is orthogonal to S
4. ATA is invertible and symmetric only is A has independednt columns: N(ATA) = N (A)
5. Then the projection b onto the column space of A is the vector p = A(ATA)-1ATb
6. The projection matrix onto C(A) is P = A(ATA)-1AT

Facts

(E32E31E21) A = U **--->** (E21-1E31-1E32-1) A = U **--->** A = LU

Rules

**Class**

**Recitation**