

# Worksheet #11 (2017/11/13)

Name:

ID:

CS3330 Scientific Computing, Instructor: Cheng-Hsin Hsu

- We plan to cover Sections 3.1–3.4 today.
  - We use Chapter 03 slides 1–28.
  - This is corresponding to the textbook pages 105–121.
- 
- 1) S5: Consider the fitting problem. When is the problem considered a linear? Why?
  - 2) S8: What's Matlab operator to solve the linear least square system? How about the (exact) linear systems?
  - 3) S14:  $P = A(A^T A)^{-1} A^T$  is an orthogonal projector onto  $\text{span}(A)$ . Show that the vector  $y \in \text{span}(A)$  that is closest to  $b$  is given by  $y = Pb = AX$ .
  - 4) S16: What can we say about  $\cos(\theta)$ ?
  - 5) S19: What are the limitations of normal equations?
  - 6) S24: Why do we need orthogonal transforms?