MATH 2360-012 WEEK 14

SECTIONS 5.4; PAGES 265–278

Abstract. The problem of finding the straight line that best fits a number $n > 2$ of sample points has a simple solution. The sample points yield n equations in 2 variables, and this system will, in general, be inconsistent. However, thinking of it as a matrix equation $AX = B$ and using the notion of distance in $\mathbb{R}^n$, we can can still look for the X that minimizes the distance $||AX - B||$.

Section 5.4

Reading. Make sure that you understand the following:

(1) What orthogonal complements and direct sums of vector spaces are.
(2) How to project a vector in a space V onto a subspace W of V.
(3) The four fundamental subspaces associated to a matrix.
(4) How to set up a least squares problem and solve it.

Suggested problems. To verify that you have understood the material, solve the following problems at the end of the section: 5, 11, 17, 23, and 25.

Date: November 18, 2020.