HOMEWORK 9: NOT FOR SUBMISSION

MATH 196, SECTION 57 (VIPUL NAIK)

1. Routine problems

Note: In the test, you will not be asked to sketch functions. The sketching instructions in the homework are to help you understand the questions better.

(1) Exercise 5.4.30 (Page 247): Fit a linear function of the form $f(t) = c_0 + c_1 t$ to the data points $(0, 0)$, $(0, 1)$, $(1, 1)$, using least squares. Use only paper and pencil. Sketch your solution, and explain why it makes sense.

(2) Exercise 5.4.31 (Page 247): Fit a linear function of the form $f(t) = c_0 + c_1 t$ to the data points $(0, 3)$, $(1, 3)$, $(1, 6)$ using least squares. Sketch the solution.

(3) Exercise 5.4.32 (Page 247): Fit a quadratic polynomial to the data points $(0, 27)$, $(1, 0)$, $(2, 0)$, $(3, 0)$ using least squares. Sketch the solution.

(4) Exercise 5.4.33 (Page 247): Find the trigonometric function of the form $f(t) = c_0 + c_1 \sin(t) + c_2 \cos(t)$ that best fits the data points $(0, 0)$, $(1, 1)$, $(2, 2)$, $(3, 3)$ using least squares. Sketch the solution together with the function $g(t) = t$.