

SHOW ALL WORK!

Problem 1 (50 pts)

Test scores of several students in two classes are given below.

Geometry (G)	Chemistry (C)
50	50
68	72
93	100
74	82
86	93
60	67

- A) Find the equation of the least squares line for predicting Chemistry scores C from Geometry scores G.
- B) Find the coefficient of determination  $r^2$  and the standard error of the estimate  $s_{y|x}$ .
- C) Use the least squares line to find the expected score in Chemistry for a student who made 80 on a Geometry test.

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Problem 2 (25 pts)

The following data was obtained from an unknown function  $f(x)$ .

$i$	$x_i$	$y_i = f(x_i)$
0	-1	1
1	0	1
2	1	1
3	2	5

A) Find the Lagrange interpolating polynomial  $f_3(x) = \sum f(x_i)L_i(x)$ .  
You do not have to simplify the answer.

B) Estimate  $f(1.1)$ .

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Exam 2

Name \_\_\_\_\_

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Problem 3 (25 pts)

Given the data points  $(0,0)$ ,  $(1,0)$ ,  $(2,6)$  and  $(3,y_4)$ , the resulting third order Newton Divided Difference interpolating polynomial is

$$f_3(x) = 3x(x-1) + x(x-1)(x-2)$$

Find  $y_4$ .