

SHOW ALL WORK!

Problem 1 (35 pts)

For the table of data points given below

x_i	y_i							
1	100							
2	53							
3	35							
4	25							

A) Fit a power equation model $y = ax^b$ to the data in the table.

B) Find the total sum of squares SST

C) Calculate $SSE = \sum_i (y_i - \hat{y}_i)^2$

You may use the remaining columns in the table to help solve the problem. Round all answers to 4 places after the decimal point.

SHOW ALL WORK!

Problem 2 (35 pts)

A Least Squares Line was fit through the 4 data points in the table below. The Sum of the squares of the errors, $SSE = 27/4$.

x_i	y_i			\hat{y}_i	e_i	e_i^2
-5	-10					
0	y_2					
1	2					
4	8					

- a) Find the missing value for y_2 .
- b) Find the equation of the Least Squares Line.

You may use the remaining columns in the table to help solve the problem. Round all answers to 4 places after the decimal point.

SHOW ALL WORK!

Problem 3 (30 pts)

Approximate the integral $I = \int_0^1 \sin \frac{\pi x}{2} dx$

- a) By trapezoidal integration using 8 intervals
- b) By Simpson's 1/3 formula using 8 intervals

You may use the remaining columns in the table to help solve the problem. Round all answers to 4 places after the decimal point.

i	x_i	$f_i = f(x_i)$
0		
1		
2		
3		
4		
5		
6		
7		
8		

