

Assigned: 03 December

Homework #13

EE 503: Fall 2024

Instructions: Write your solutions to these homework problems on separate sheets of paper. Submit your work to Brightspace by the due date. Show all work and box answers where appropriate. Do not guess.

Due: Thursday, 12 December at 12:00.

1. Use a statistical software package (e.g., SPSS or Python) to compute the sample statistics \bar{x} , \bar{y} , s_x , s_y , s_x^2 , s_y^2 , s_{xy} , r_{xy} , r_{xy}^2 from the following real data on the “sweetness” Y and the pectin content X of pressed orange juice from 24 production runs:

Run	Sweetness index	Pectin (parts per million)
1	5.20	220.00
2	5.50	227.00
3	6.00	259.00
4	5.90	210.00
5	5.80	224.00
6	6.00	215.00
7	5.80	231.00
8	5.60	268.00
9	5.60	239.00
10	5.90	212.00
11	5.40	410.00
12	5.60	256.00
13	5.80	306.00
14	5.50	259.00
15	5.30	284.00
16	5.30	383.00
17	5.70	271.00
18	5.50	264.00
19	5.70	227.00
20	5.30	263.00
21	5.90	232.00
22	5.80	220.00
23	5.80	246.00
24	5.90	241.00

What is the linear regression equation of the sweetness Y as a function of the pectin content X ? Plot a “scatter diagram” with the sweetness index on the vertical axis and the pectin content of the juice on the horizontal axis. Turn in all printouts as appendices.

2. Repeat the above regression for 24 or more paired samples (x_i, y_i) from some online database that you find and duly cite.