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Lab 3 Linear

Build ~~logistic~~ regression model

1. Consider a binary classification problem where we want to predict whether a student will pass or fail based on their study hours. The logistic regression model has been trained and the learned parameters are $a_0 = -5$ (intercept) & $a_1 = 0.8$ (coefficient for study hours)

a- write the logistic regression eqn for this problem

b- cal^c

=> For given data

X (Sales)	Y (Profit)
1	2
2	4
3	5
4	9

Apply linear regression with ordinary and matrix methods and predict for a case when X = 6

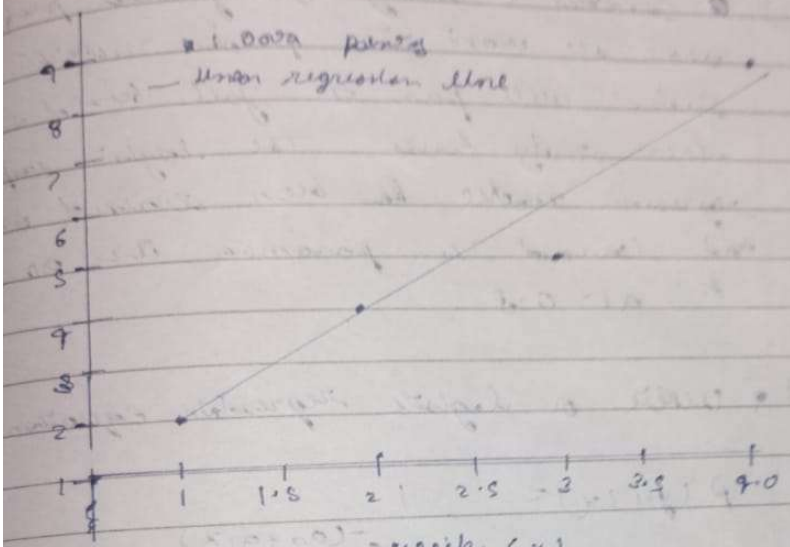
① Regular

```
import pandas as pd
import numpy as np

x_values = [1, 2, 3, 4]
y_values = [2, 4, 5, 9]

df = pd.DataFrame({'x': x_values, 'y': y_values})

x = df['x']
y = df['y']

x_mean = x.mean()
y_mean = y.mean()

numerator = ((x - x_mean) * (y - y_mean)).sum()
denominator = ((x - x_mean) ** 2).sum()

b0 = y_mean
b1 = numerator/denominator
b0 = y_mean - (b1 * x_mean)

print("Slope (b1):", b1)
print("Intercept (b0):", b0)

x_new = 5
y_predicted = b0 + (b1 * x_new)

print("predicted value for x=5:",
      y_predicted)
```

Op

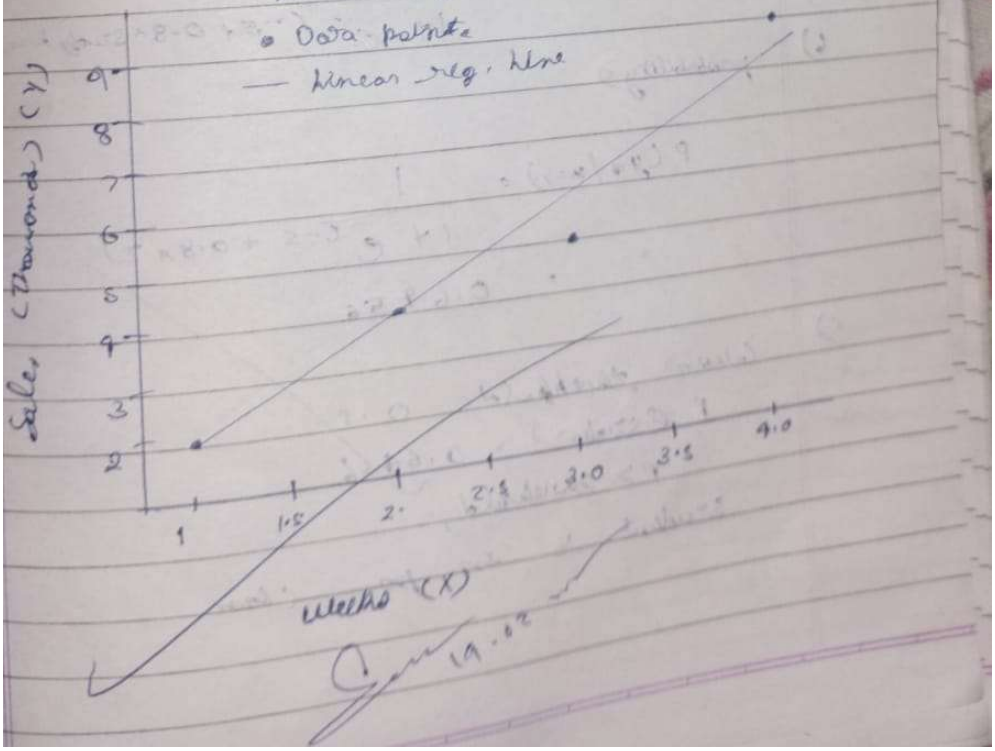
for regular

Linear Regression : Weeks vs Sales



for marks

Linear Regression : Weeks vs Sales



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