Lab 3

Consider the given data points: (1,1), (2,1), (3,2), (4,2), (5,4).

Regression line equation: Y = 0.7X – 0.1

1. Check whether the following is correct:

X	Y	$\hat{Y}_i$
1	1	0.6
2	1	1.29
3	2	1.99
4	2	2.69
5	4	3.4

2. Check whether MSE = **0.21606**
3. There are TWO ways to automatically calculate MSE:
   a) Using **scikit learn**

```
from sklearn.metrics import mean_squared_error

# Given values
Y_true = [1,1,2,2,4]                    # Y_true = Y (original values)

# calculated values
Y_pred = [0.6,1.29,1.99,2.69,3.4]                    # Y_pred = Y'

# Calculation of Mean Squared Error (MSE)
mean_squared_error(Y_true,Y_pred)
```

b) **MSE using Numpy module**

```
import numpy as np

# Given values
Y_true = [1,1,2,2,4]                    # Y_true = Y (original values)

# Calculated values
Y_pred = [0.6,1.29,1.99,2.69,3.4]                    # Y_pred = Y'

# Mean Squared Error
MSE = np.square(np.subtract(Y_true,Y_pred)).mean()
```

4. Use both functions to calculate MSE for the different W_s and b_s in your previous lab code from last week.