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Kelas : D3 TI 2A
Mata Kuliah : Metode Numerik

TUGAS PRAKTIKUM

1. Menggunakan rumus statistik untuk menghitung slope dan intercept.

```
1 import numpy as np;
2
3 x = np.array ([1,2,3,4,5,6,7,8])
4 y = np.array ([2,4,5,4,5,9,8,9])
5
6 n = len(x)
7
8
9 sum_x = sum(x)
10 sum_y = sum(y)
11
12 sum_xy = sum(x[i] *y[i] for i in range (n))
13 sum_x2 = sum(x[i] **2 for i in range (n))
14
15 b = (n * sum_xy - sum_x * sum_y) / (n, sum_x2 - sum_x*2)
16 a = (sum_y - b * sum_x) /n
17
18 print (f"Slope (b):{b}")
19 print (f"intercept(a):{a}")
```

```

import numpy as np;

x = np.array([1,2,3,4,5,6,7,8])
y = np.array([2,4,5,4,5,9,8,9])

n = len(x)

sum_x = sum(x)
sum_y = sum(y)

sum_xy = sum(x[i] * y[i] for i in range(n))
sum_x2 = sum(x[i] ** 2 for i in range(n))

b = (n * sum_xy - sum_x * sum_y) / (n * sum_x2 - sum_x ** 2)
a = (sum_y - b * sum_x) / n

print(f"Slope (b):{b}")
print(f"intercept(a):{a}")

```

✓ 0.3s

Slope (b):[41. 2.48484848]
intercept(a):[-178.75 -5.43181818]

2. Fitting secara otomatis menghitung slope dan intercept, untuk meminimalisasi kesalahan kuadrat.

```

1  from sklearn.linear_model import LinearRegression
2
3  x = np.array([1,2,3,5,4,6,7]).reshape(-1,1)
4  y = np.array([9,6,4,8,5,7,3]).reshape(-1,1)
5
6  model = LinearRegression().fit(x,y)
7
8  print(f"Slope(coef_): {model.coef_[0]}")
9
10 print(f"Intercept: {model.intercept_}")
11

```

```
from sklearn.linear_model import LinearRegression

x = np.array([1,2,3,5,4,6,7]).reshape(-1,1)
y = np.array([9,6,4,8,5,7,3]).reshape(-1,1)

model = LinearRegression().fit(x,y)

print(f"Slope(coef_): {model.coef_[0]}")

print(f"Intercept: {model.intercept_}")
```

✓ 0.4s

Slope(coef_): [-0.42857143]
Intercept: [7.71428571]

3. Menggunakan matplotlib.pyplot untuk memvisualisasikan data scatter dan garis regresi yang di hasilkan oleh model scikit-learn.



```
1  from sklearn.linear_model import LinearRegression
2
3  x = np.array([1,2,3,5,4,6,7]).reshape(-1,1)
4  y = np.array([9,6,4,8,5,7,3]).reshape(-1,1)
5
6  model = LinearRegression().fit(x,y)
7
8  print(f"Slope(coef_): {model.coef_[0]}")
9
10 print(f"Intercept: {model.intercept_}")
11
```

```
import matplotlib.pyplot as plt  
  
plt.scatter(x,y, color='blue')  
plt.plot (x, model.predict(x), color='green', label='Regresi Linear')  
  
plt.xlabel('X')  
plt.ylabel('Y')  
plt.legend()  
plt.show()
```

✓ 0.9s

