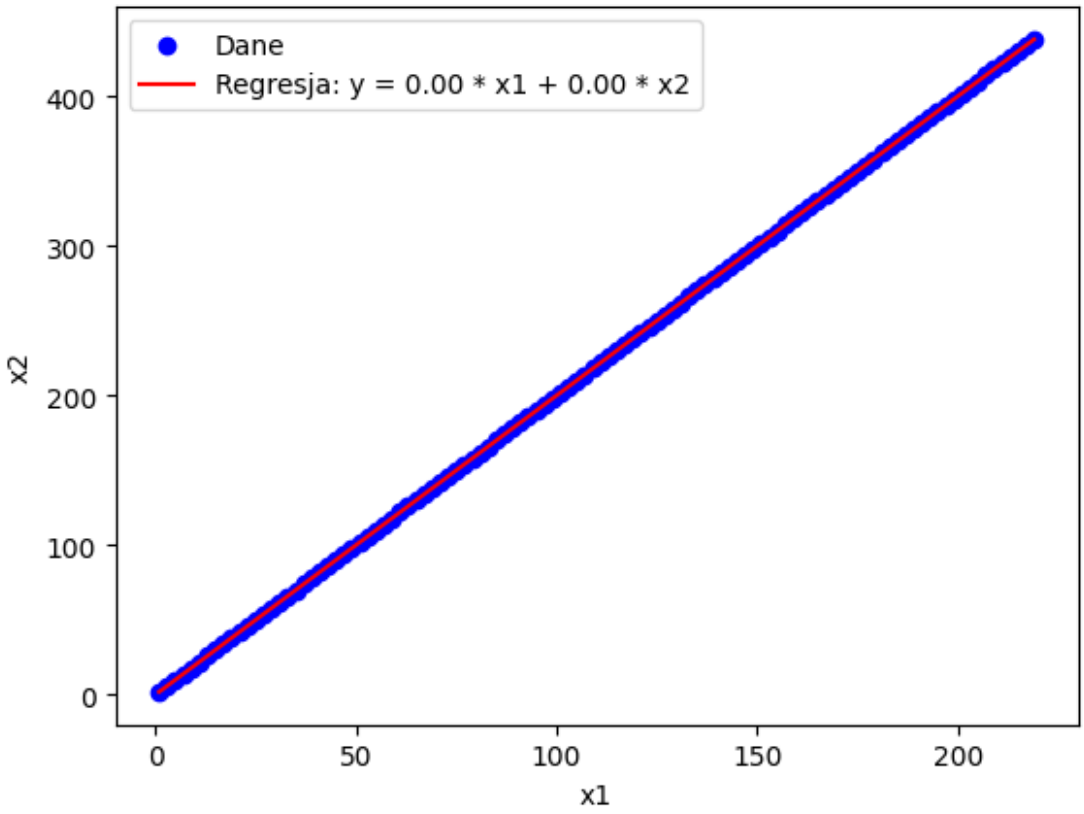
```
#Matematyka konkretna
#Wariant 15 Karolina Baron

#Zadanie dotyczy obliczenia wieleliniowej regresji z użyciem macierzy
psewdoodwrotnej dla zależności
#$$y=a*x_1 + b*x_2,$$
#gdzie $a$, $b$ są niewiadome, wartości $x_1,x_2,y_2$ określone
wariantem zadania.

import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
data = pd.read_csv('war1.csv', sep=';')
data['y'] = data['y'].str.replace(',', '.', regex=True).astype(float)
data['y'] = data['y'].astype(int)
x1 = data['x1'].values
x2 = data['x2'].values
y = data['y'].values
X = np.column_stack((x1, x2, np.ones_like(x1)))
X_pseudo_inv = np.linalg.pinv(X)
b = np.dot(X_pseudo_inv, y)
a, b = b[0], b[1]
x1_reg = np.linspace(min(x1), max(x1), 100)
x2_reg = np.linspace(min(x2), max(x2), 100)
y_reg = a * x1_reg + b * x2_reg
plt.scatter(x1, x2, c='blue', label='Dane')
plt.plot(x1_reg, x2_reg, c='red', label=f'Regresja: y = {a:.2f} * x1 +
{b:.2f} * x2')
plt.xlabel('x1')
plt.ylabel('x2')
plt.legend()
plt.show()
```

```
C:\Users\nextn\AppData\Local\Temp\ipykernel_32304\2362634161.py:2:
DeprecationWarning:
Pyarrow will become a required dependency of pandas in the next major
release of pandas (pandas 3.0),
(to allow more performant data types, such as the Arrow string type,
and better interoperability with other libraries)
but was not found to be installed on your system.
If this would cause problems for you,
please provide us feedback at
https://github.com/pandas-dev/pandas/issues/54466

  import pandas as pd
```


Dane
Regresja: y = 0.00 * x1 + 0.00 * x2
400
300
200
100
0
x2
0
50
100
150
200
x1