```python
from sklearn.datasets import load_diabetes
from sklearn.linear_model import LinearRegression, Ridge, Lasso
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_squared_error, r2_score

data = load_diabetes()
X, y = data.data, data.target

X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.2)

lr = LinearRegression()
lr.fit(X_train, y_train)
y_pred_lr = lr.predict(X_test)
print("R^2:", r2_score(y_test, y_pred_lr))
```

```
R^2: 0.551421067415138
```

```python
from sklearn.linear_model import Ridge
from sklearn.datasets import load_diabetes

# Załaduj dane
data = load_diabetes()
X, y = data.data, data.target

# Trenuj model Ridge
ridge = Ridge(alpha=1.0)
ridge.fit(X, y)

# Współczynniki regresji jako miara ważności cech
feature_importance = abs(ridge.coef_)
print("Ważność cech:", feature_importance)
```

```
Ważność cech: [ 29.46611189  83.15427636 306.35268015 201.62773437
5.90961437
  29.51549508 152.04028006 117.3117316  262.94429001 111.87895644]
```

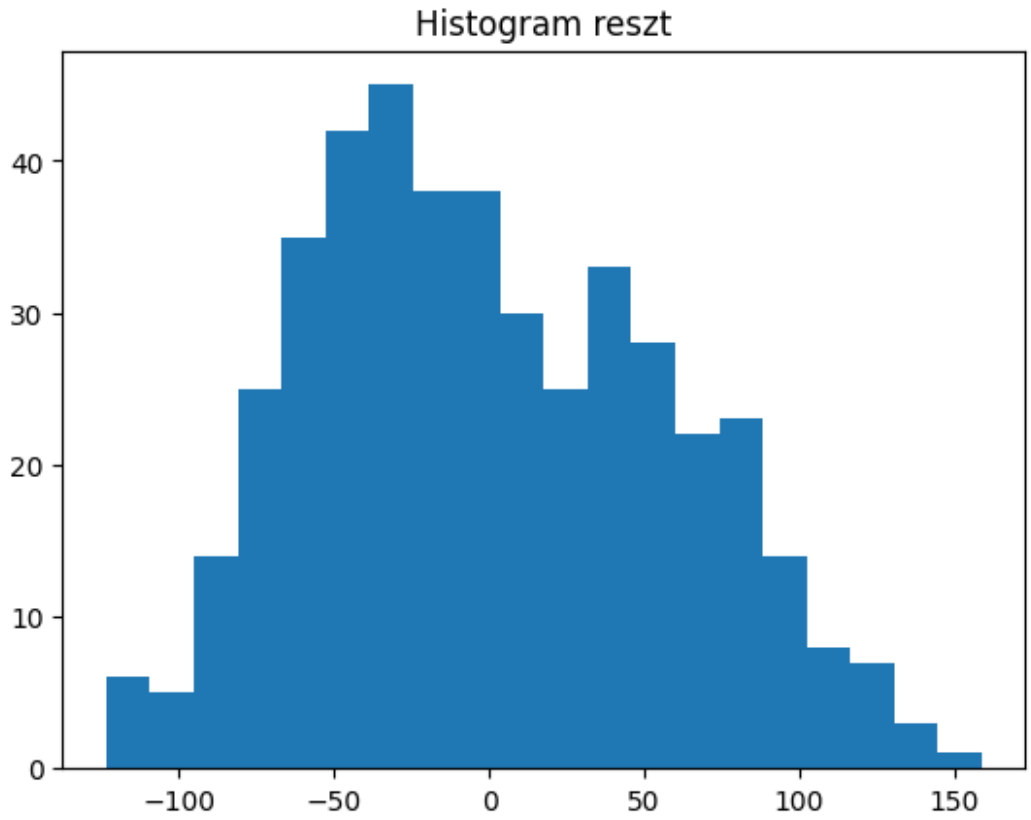
```python
from scipy.stats import shapiro
import matplotlib.pyplot as plt
import numpy as np

# Oblicz reszty
residuals = y - ridge.predict(X)

# Histogram reszt
plt.hist(residuals, bins=20)
plt.title("Histogram reszt")
plt.show()

# Test Shapiro-Wilka
```

```
stat, p = shapiro(residuals)
print("Statystyka Shapiro-Wilka:", stat, "P-wartość:", p)
```




```
Statystyka Shapiro-Wilka: 0.982184886932373 P-wartość:
2.9706814530072734e-05

from statsmodels.stats.stattools import durbin_watson

# Test Durbin-Watsona
dw_stat = durbin_watson(residuals)
print("Statystyka Durbin-Watsona:", dw_stat)

Statystyka Durbin-Watsona: 1.927616883684219
```