

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
from sklearn.preprocessing import PolynomialFeatures
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import r2_score
```

```
x = np.array([1,2,3,4,5,6]).reshape(-1,1)
y = np.array([1,4,9,16,25,36])
```

```
x_train , x_test,y_train,y_test = train_test_split(x,y,test_size = 0.2,random_state=42)
```

```
poly = PolynomialFeatures(degree=2 , include_bias= False)
x_train_poly = poly.fit_transform(x_train)
x_test_poly = poly.transform(x_test)
```

```
model = LinearRegression()
model.fit(x_train_poly,y_train)
y_pred = model.predict(x_test_poly)
print("R2 score : ", r2_score(y_test,y_pred))
```

```
R2 score : 1.0
```

```
X_range = np.linspace(x.min(), x.max(), 100).reshape(-1, 1)
X_range_poly = poly.transform(X_range)
y_range_pred = model.predict(X_range_poly)

plt.scatter(x, y, label="Actual Data")
plt.plot(X_range, y_range_pred, label="Polynomial Curve")
plt.legend()
plt.show()
```

