LOGISTIC REGRESSION

```python
import numpy as np

import matplotlib.pyplot as plt

from sklearn.datasets import load_iris

from sklearn.linear_model import LogisticRegression


def sigmoid(z):

    return 1 / (1 + np.exp(-z))


# Load the iris dataset

iris = load_iris()

X = iris.data[:, 2].reshape(-1, 1)  # Selecting one feature for simplicity (e.g., petal length)

y = (iris.target != 0).astype(int)  # Convert to binary classification problem (versicolor or not)


model = LogisticRegression()

model.fit(X, y)


X_test = np.linspace(X.min(), X.max(), 300).reshape(-1, 1)

z = model.intercept_ + model.coef_ * X_test

probabilities = sigmoid(z).ravel()


plt.scatter(X, y, color='black', label='Actual data')

plt.plot(X_test, probabilities, color='blue', label='Sigmoid function')

plt.title('Logistic Regression with Sigmoid Function for Iris Dataset')

plt.xlabel('Petal length')

plt.ylabel('Probability')

plt.legend()

plt.show()
```

Logistic Regression with Sigmoid Function for Iris Dataset