```python
from sklearn.cluster import KMeans
from sklearn.preprocessing import StandardScaler
from sklearn.pipeline import make_pipeline
import matplotlib.pyplot as plt
from sklearn import datasets


iris = datasets.load_iris()


X = iris.data[:, 2:]


scaler = StandardScaler()


kmeans = KMeans(n_clusters=3)


pipeline = make_pipeline(scaler, kmeans)


pipeline.fit(X)
```
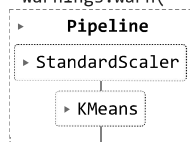
```
/usr/local/lib/python3.10/dist-packages/sklearn/cluster/_kmeans.py:870: FutureWarning:
  warnings.warn(
```

```
▸        Pipeline

▸ StandardScaler

      ▸ KMeans
```

```python
distortions = []
K = range(1,10)
for k in K:
    kmeanModel = KMeans(n_clusters=k)
    kmeanModel.fit(X)
    distortions.append(kmeanModel.inertia_)

plt.figure(figsize=(16,8))
plt.plot(K, distortions, 'bx-')
plt.xlabel('k')
plt.ylabel('Distortion')
plt.title('The Elbow Method showing the optimal k')
plt.show()
```

```
/usr/local/lib/python3.10/dist-packages/sklearn/cluster/_kmeans.py:870: FutureWarning: The default value of `n_init` will change from 1
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The Elbow Method showing the optimal k