```
import numpy as np
import pandas as pd
from sklearn.cluster import DBSCAN
from sklearn.preprocessing import StandardScaler,MinMaxScaler
from sklearn.decomposition import PCA
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.neighbors import NearestNeighbors
```

```
df= pd.read_csv("Wine_clustering.csv")
```

```
df.head()
```

	Alcohol	Malic_Acid	Ash	Ash_Alcanity	Magnesium	Total_Phenols	Flavanoids	Nonflavanoid_Phenols	Proa
0	14.23	1.71	2.43	15.6	127	2.80	3.06	0.28	2.29
1	13.20	1.78	2.14	11.2	100	2.65	2.76	0.26	1.28
2	13.16	2.36	2.67	18.6	101	2.80	3.24	0.30	2.81
3	14.37	1.95	2.50	16.8	113	3.85	3.49	0.24	2.18
4	13.24	2.59	2.87	21.0	118	2.80	2.69	0.39	1.82

```
scale=StandardScaler()
data=scale.fit_transform(df)
```

```
min_max=MinMaxScaler()
data=min_max.fit_transform(data)
```

```
pca=PCA(n_components=2)
data=pca.fit_transform(data)
```

```
df=pd.DataFrame(data,columns=['X','Y'])
```

```
neighbours=NearestNeighbors(n_neighbors=4)
nbrs=neighbours.fit(df)
dis,ind=nbrs.kneighbors(df)
```
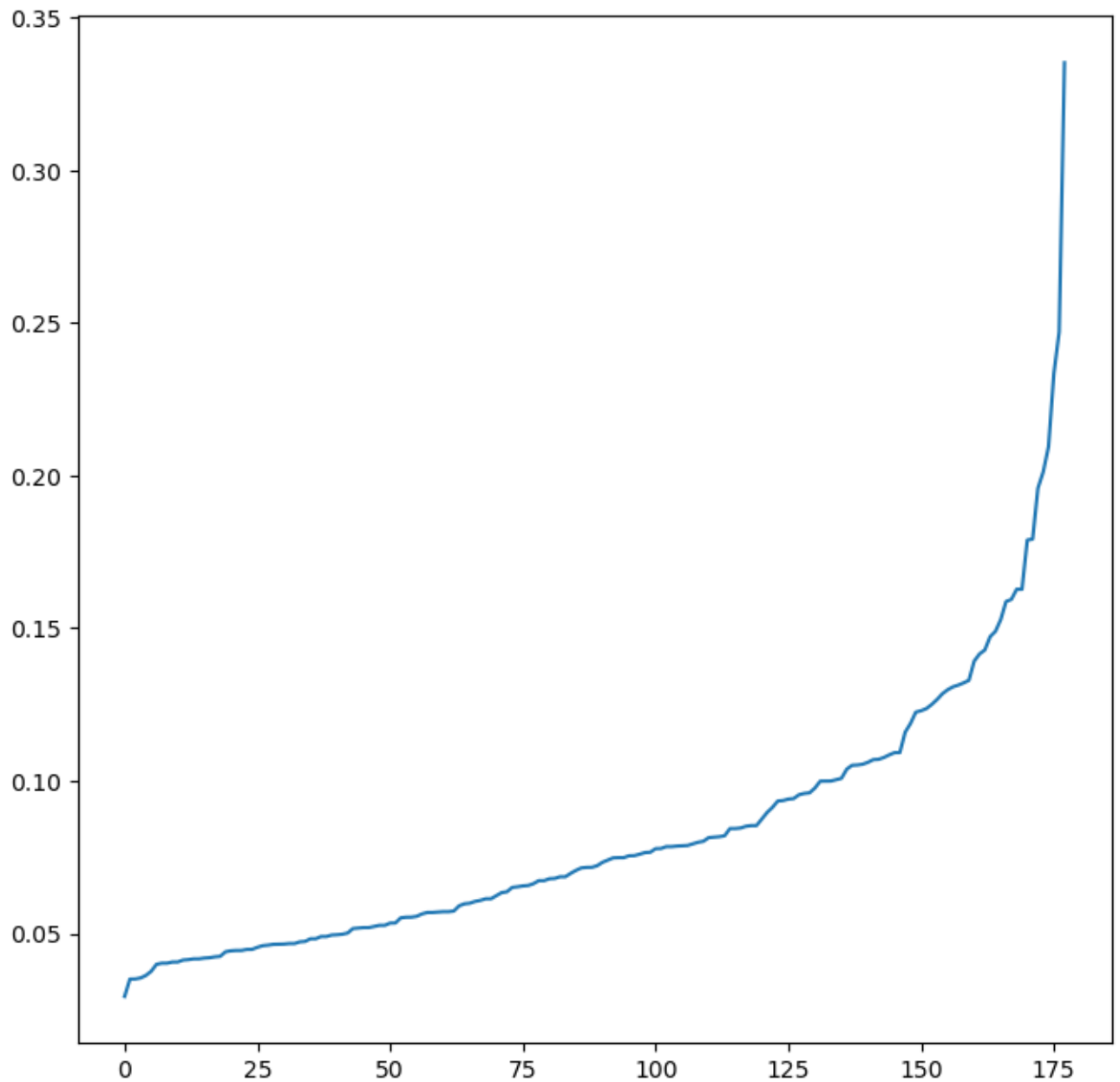
```
dis=np.sort(dis,axis=0)
```

```
dis=dis[:,-1]
```

```
plt.figure(figsize=(8,8))
plt.plot(dis)
```
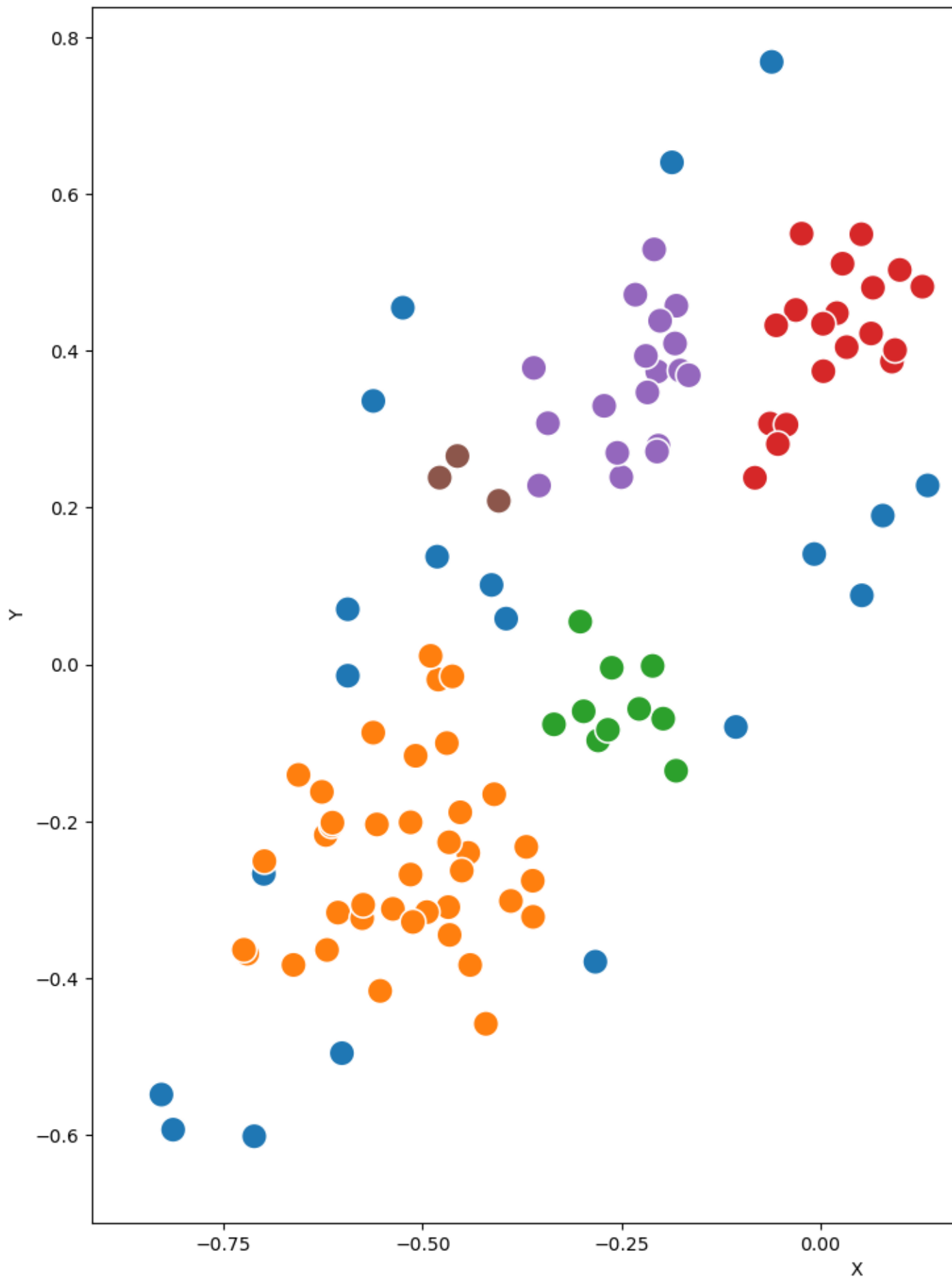
```
[<matplotlib.lines.Line2D at 0x253cc11c710>]
```

```
cluster=DBSCAN(eps=0.09,min_samples=4)
df['Label']=cluster.fit_predict(df)
```

```
plt.figure(figsize=(15, 12))
sns.scatterplot(x='X',y='Y',data=df,hue='Label',palette='tab10',s=200)
```

```
<Axes: xlabel='X', ylabel='Y'>
```