23/5/24

* support vector machine (svm)

```
from sklearn.datasets import load_breast_cancer
import matplotlib.pyplot as plt
from sklearn.svm import SVC
cancer = load_breast_cancer()
X = cancer.data[:, :2]
y = cancer.target
svm = SVC(kernel='rbf', gamma=0.5, C=10)
svm.fit(X,y)
plt.scatter(X[:,0],X[:,1], c=y, s=20)
plt.show()
```

* PCA using sklearn

```
from sklearn.decomposition import PCA
pca = PCA(n_components=2)
pca.fit(2)
X_pca = pca.transform(2)
df_pca = pd.DataFrame(X_pca, columns=['PCs%i'
                format(i+1) for i in
                range
                (n_components)])
print(df_pca)
```

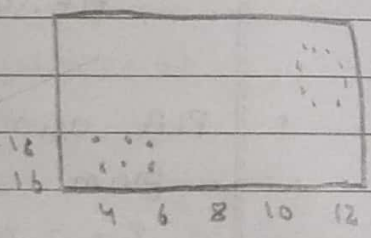
output:

	PC1	PC2
0	9.1041	1.9468
:		

* K means Clustering

```
from sklearn.cluster import kmeans
    data = list (zip(x,y))
    inertias = []
for i in range (1,11):
    kmeans = kmeans (n_clusters = i)
    kmeans = fit (data)
    plt.scatter (x,y, c = kmeans_labels)
    plt.show ()
```

Output =



* PCA

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
% matplotlib inline
from sklearn.decomposition import PCA
from sklearn.preprocessing import standardscaler

from sklearn.datasets import load_breast_cancer
data = load_breast_cancer
data.keys()

print (data ['feature_names'])

df1 = pd.DataFrame (data ("data"), columns = data
    ['feature_names'])

scaling = standard scaler()
scaling.fit(data)
scaled_data = scaling.transform (data)
principal = PCA (n_components = 3)
principal.fit (scaled_data)
x = principal.transform (scaled_data)

plt.figure (figsize = (10,10))
plt.scatter (x[:,0], x[:,1], c=data ['target'],
plt.xlabel ('PC1')
plt.ylabel ('PC2')
```