```
# mengimport library
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt


# metode svm
from sklearn import svm, datasets
from sklearn.model_selection import train_test_split


#mengimport dataset (dataset yang digunakan yaitu dataset redwine)
data = pd.read_csv('/content/sample_data/winequality-red.csv')
data.head()
```

	fixed acidity	volatile acidity	citric acid	residual sugar	chlorides	free sulfur dioxide	total sulfur dioxide	density	pH	sulp
0	7.4	0.70	0.00	1.9	0.076	11.0	34.0	0.9978	3.51	
1	7.8	0.88	0.00	2.6	0.098	25.0	67.0	0.9968	3.20	
2	7.8	0.76	0.04	2.3	0.092	15.0	54.0	0.9970	3.26	
3	11.2	0.28	0.56	1.9	0.075	17.0	60.0	0.9980	3.16	
4	7.4	0.70	0.00	1.9	0.076	11.0	34.0	0.9978	3.51	

```
# proses splint data
from sklearn.model_selection import train_test_split
x_train, x_test, y_train, y_test = train_test_split(
    x, y, test_size=0.2, random_state=1
)


from sklearn import svm
model_SVM = svm.SVC(kernel='linear')
model_SVM.fit(x_train, y_train)
y_predict = model_SVM.predict(x_test) # berisi hasil data testing
```

```
/usr/local/lib/python3.7/dist-packages/sklearn/utils/validation.py:993: DataConversionW
  y = column_or_1d(y, warn=True)
```

```
#testing
prediksi = model_SVM.predict([[0.70, 0.00, 1.9, 0.76, 1.0]]) # angkanya bebas
```

```
if prediksi == "0":
  print(prediksi, "kualitas red wine rendah")
else:
  print(prediksi, "kualitas red wine tinggi")
```

```
[5] kualitas red wine tinggi
/usr/local/lib/python3.7/dist-packages/sklearn/base.py:451: UserWarning: X does not hav
  "X does not have valid feature names, but"
/usr/local/lib/python3.7/dist-packages/ipykernel_launcher.py:3: FutureWarning: elementw
  This is separate from the ipykernel package so we can avoid doing imports until
```

```
# menghitung confusion matrix
from sklearn.metrics import  confusion_matrix
confusion_matrix = confusion_matrix(y_test, y_predict)
print(confusion_matrix)
```

```
[[  0   0   1   0   0   0]
 [  0   0   7   3   0   0]
 [  0   0 102  41   0   0]
 [  0   0  50  79   0   0]
 [  0   0   6  29   0   0]
 [  0   0   1   1   0   0]]
```

```
# menampilkan report hasil confusion matrix
from sklearn.metrics import classification_report
print(classification_report(y_test, y_predict))
```

```
                   precision    recall  f1-score   support

                3       0.00      0.00      0.00         1
                4       0.00      0.00      0.00        10
                5       0.61      0.71      0.66       143
                6       0.52      0.61      0.56       129
                7       0.00      0.00      0.00        35
                8       0.00      0.00      0.00         2

         accuracy                           0.57       320
        macro avg       0.19      0.22      0.20       320
     weighted avg       0.48      0.57      0.52       320

/usr/local/lib/python3.7/dist-packages/sklearn/metrics/_classification.py:1318: Undefin
  _warn_prf(average, modifier, msg_start, len(result))
/usr/local/lib/python3.7/dist-packages/sklearn/metrics/_classification.py:1318: Undefin
  _warn_prf(average, modifier, msg_start, len(result))
/usr/local/lib/python3.7/dist-packages/sklearn/metrics/_classification.py:1318: Undefin
  _warn_prf(average, modifier, msg_start, len(result))
```

New Section

```
#pembagian Atribut Independen (x) dan Atribut Dependen (y)
x = pd.DataFrame(data.iloc[:,1:6])
y = pd.DataFrame(data.iloc[:,11:12])


print("5 paling atas data fitur: \n" , x.head())
print("========================")
print("5 paling atas data kelas: \n" , y.head())
```

```
5 paling atas data fitur:
    volatile acidity  citric acid  ...  chlorides  free sulfur dioxide
0              0.70         0.00  ...      0.076                 11.0
1              0.88         0.00  ...      0.098                 25.0
2              0.76         0.04  ...      0.092                 15.0
3              0.28         0.56  ...      0.075                 17.0
4              0.70         0.00  ...      0.076                 11.0

[5 rows x 5 columns]
========================
5 paling atas data kelas:
    quality
0        5
1        5
2        5
3        6
4        5
```