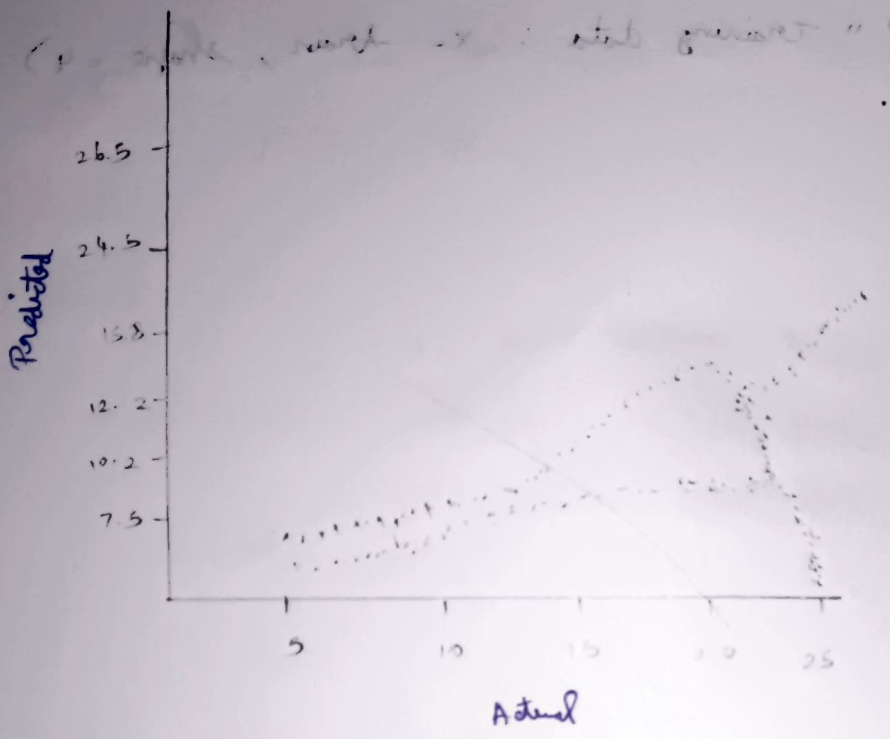
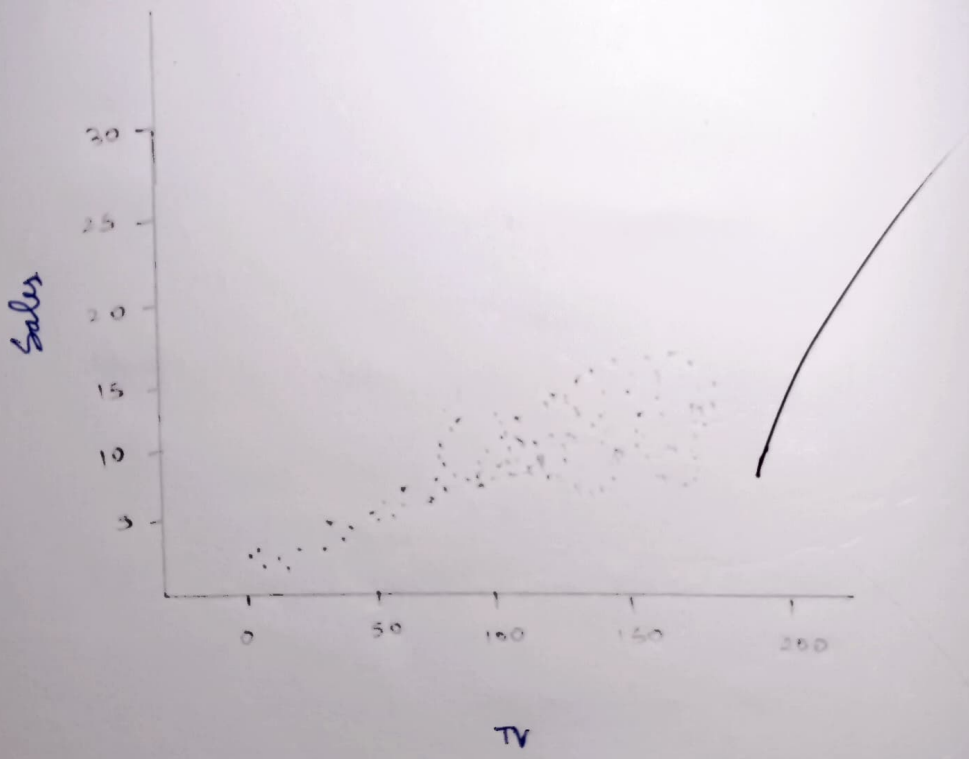
Linear Regression : Actual vs Predicted



K-means Clustering : TV vs Sales



EX. NO: 3 Sales prediction and customer segmentation using Linear Regression & K-means

AIM:

To predict sales based on clustering based on budget across TV, Radio & newspaper using linear Regression & also K-means clustering.

CODE:

```
import pandas as pd
import matplotlib as plt
import seaborn as sns
from sklearn.model_selection import
                    train_test_split.
from sklearn.metrics import split
                    mean_sq_error
from sklearn.cluster import K means
from sklearn.preprocessing import
                    Standard Scaler

df = pd.read_csv('advertising.csv')
print(df.head())
print(df.describe())

x = df[['TV', 'Radio', 'Newspaper']].]

y = df['Sales']

x_train, x_test, y_train, y_test =
        train_test_split(df, t-s
                        =0.2)
```

```
model = LinearRegression()
model.fit(X_train, Y_train)
Y_pred = model.predict(X_test)
mse = mean_squared_error(Y_test, Y_pred)
print("MSE", mse)
plt.figure(figsize=(8,5))
sns.scatterplot(x=Y_test, y=Y_pred)
plt.show()
Scaled = StandardScaler()
Scaled = Scaled.fit_transform(df
                ['Tv', 'Radio', 'Newspaper'])
K_means = Kmeans(n_cluster, random_state
                =0)
plt.show()
```

RESULT:

Thus, the program to perform linear regression and k means has been executed successfully.