ComS574\_HW1

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# Problem 1:

path = 'Kanak\_lab1\\';  
  
import numpy as np  
from sklearn import linear\_model  
from sklearn.preprocessing import PolynomialFeatures  
import matplotlib.pyplot as plt  
  
# import warnings  
# warnings.filterwarnings("ignore", message="divide by zero encountered in log")  
# warnings.filterwarnings("ignore", message="invalid value encountered in multiply")  
  
X = np.array([0, 5, 8, 12]).reshape(-1,1)  
Y = np.array([10, 5, 12, 0])  
X = PolynomialFeatures(degree=3).fit\_transform(X)  
lm = linear\_model.LinearRegression()  
model = lm.fit(X, Y)  
model.coef\_

## array([ 0. , -7.01190476, 1.69345238, -0.09821429])

Xnew = np.arange(-5, 20).reshape(-1,1)  
pred = model.predict(PolynomialFeatures(degree=3).fit\_transform(Xnew))  
pred1 = model.predict(X)  
print(pred1)  
# plt.scatter(X[:,1], Y, alpha=0.5, facecolors='black', edgecolors='black', s=100)  
# plt.plot(X[:,1], pred1, color = 'red')  
# plt.title('Scatter plot with polynomial line')  
# plt.xlabel('X')  
# plt.ylabel('Y')  
# plt.ylim(-5,20)  
# plt.xlim(-5,20)  
# plt.show()

## [ 1.0000000e+01 5.0000000e+00 1.2000000e+01 -1.7408297e-12]