Name: Shyam Swapnil tayade;

Roll No:71;

Experment no 1: Group 4 :

Example 1 (Descartes Rule of Sign)

n=int(input("Enter order of equation:"))

# Input Section

order=input("Enter present order from high to low:")

coeff=input("Enter corresponding coefficients:")

order1=list(map(int,order.split()))

coeff1=list(map(int,coeff.split()))

print(coeff1)

# count of sign changes in f(x)

last\_sign = coeff1[0]/abs(coeff1[0])

sign\_changes = 0

for x in coeff1:

sign = x / abs(x)

if sign == -last\_sign:

sign\_changes = sign\_changes + 1

last\_sign = sign

p=sign\_changes

# Changes f(x) to f(-x)

i=0; coeff2=[];

for x in order1:

if(x%2)==0:

coeff2.append(coeff1[i])

i=i+1;

else:

coeff2.append(coeff1[i]\*-1)

i=i+1;

print(coeff2)

# count of sign changes in f(-x)

last\_sign = coeff2[0]/abs(coeff2[0])

sign\_changes = 0

for x in coeff2:

sign = x / abs(x)

if sign == -last\_sign:

sign\_changes = sign\_changes + 1

last\_sign = sign

q=sign\_changes

# Output section

print("Number of roots n=",n)

print("Number of real positive roots p<=",p)

print("Number of real negative roots q<=",q)

print("Number of complex roots c<=",n-(p+q))

Output Section:

Enter order of equation:6

Enter present order from high to low:6 5 4 3 2

Enter corresponding coefficients:8 6 4 3 -1 -8

[8, 6, 4, 3, -1, -8]

[8, -6, 4, -3, -1]

Number of roots n= 6

Number of real positive roots p<= 1

Number of real negative roots q<= 3

Number of complex roots c<= 2