**D.1**

x=[-1 -0.9511 -0.8090 -0.5878 -0.3090 0 0.3090 0.5878 0.8090 0.9511 1];

y=[0.0385 0.0424 0.0576 0.1038 0.2952 1 0.2952 0.1038 0.0576 0.0424 0.0385];

a=zeros(9,9);

for i=2:8

a(i,i-1)=(x(i+1)-x(i))/6;

a(i,i)=(x(i+2)-x(i))/3;

a(i,i+1)=(x(i+2)-x(i+1))/6;

end

a(1,1)=0.063666667;

a(1,2)= 0.0236833;

a(9,8)=0.023683333;

a(9,9)=0.063667;

b=zeros(9,1)

for i=1:9

b(i)=((y(i+2)-y(i+1))/(x(i+2)-x(i+1))-(y(i+1)-y(i))/(x(i+1)-x(i)));

end

r=pinv(a)\*b

answer: g’’(xi)=

[-0.13415 1.50964 -2.10886 16.64580 -30.46762 16.64580 -2.10886 1.50964

-0.13415 ] , g’’(x0)=g’’(x10)=0

**D.2**

x=[-1 -0.9511 -0.8090 -0.5878 -0.3090 0 0.3090 0.5878 0.8090 0.9511 1];

y=[0.0385 0.0424 0.0576 0.1038 0.2952 1 0.2952 0.1038 0.0576 0.0424 0.0385];

xx=-1:0.01:1;

yy=spline(x,y,xx);

plot(x,y,”o”,xx,yy)

xlabel(‘x’)

ylabel(‘y’)

print –dpng output.png

