B.1

```
a=[0.4/3 0.1/3 0 0 0 0 0 0 0;
        0.1/3 0.4/3 0.1/3 0 0 0 0 0 0;
        0 0.1/3 0.4/3 0.1/3 0 0 0 0 0;
        0 0 0.1/3 0.4/3 0.1/3 0 0 0 0;
        0 0 0 0.1/3 0.4/3 0.1/3 0 0 0;
        0 0 0 0 0.1/3 0.4/3 0.1/3 0 0;
        0 0 0 0 0 0.1/3 0.4/3 0.1/3 0;
        0 0 0 0 0 0 0.1/3 0.4/3 0.1/3;
        0 0 0 0 0 0 0 0.1/3 0.4/3;]
y=[0.0385 0.0588 0.1 0.2 0.5 1 0.5 0.2 0.1 0.0588 0.0385];
x=[-1 -0.8 -0.6 -0.4 -0.2 0 0.2 0.4 0.6 0.8 1];
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)= [0.41374 1.48003 2.48615 18.57539 -46.78769 18.57539 2.48615 1.48003 0.41374] , g''(x0) = g''(x10) = 0

B.2

```
>> x=[-1 -0.8 -0.6 -0.4 -0.2 0 0.2 0.4 0.6 0.8 1];
>> y=[0.0385 0.0588 0.1 0.2 0.5 1 0.5 0.2 0.1 0.0588 0.0385];
>> xx=-1:0.01:1;
>> yy=spline(x,y,xx);
>> plot(x,y,"o",xx,yy)
>> print "-S500,400" -dpng output.png
```