```
//Show that[J1/2(x)]^2 + [J-1/2(x)]^2=2/(pi*x)
funcprot(0);
n=1/2;
x=%pi/3;
A=besselj(n,x);
A=sqrt(2/(%pi*x))*(sin(x));
m=-(1/2);
x=(%pi/3);
B=besselj(m,x);
B=sqrt(2/(%pi*x))*(cos(x));
LHS=A^2+B^2
RHS=(2/(%pi*x))
disp('LHS=RHS  Hence Proved')
```

```
//Show that Pn(-1)=(-1)^n
funcprot(0);
x=[-1]';
for n=[0:5]';
LHS=legendre(n,0,x)'//it is Pn(-1)
RHS=((-1).^n)'//it is (-1)^n
disp('LHS=RHS')
disp('Pn(-1)=(-1)^n Hence Proved')
end
```

```
//Show that Pn(1)=1
funcprot(0);
x=1;
LHS=legendre(n,0,x)'
RHS=1
disp('LHS=RHS')
disp('Pn(1)=1  Hence Proved')
```

```
//Show that Pn(-x)=(-1)^nPn(x)
funcprot(0);
x=[-1:1]';
n=2;
RHS=((-1)^n).*legendre(n,0,x)'
t=[-1:1]';
t=-t;
LHS=legendre(n,0,t)'
disp('LHS=RHS')
disp('Pn(-x)=(-1)^nPn(-x) Hence Proved')
```