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Course:B.Sc(H) Physics Sem-5

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AIM: To compute their expectation values

Source Code:

clc

clear

x=poly(0,'x')

l1=input("Enter lower limit of 1-D box: ")

l2=input("Enter upper limit of 1-D box: ")

L=l2-l1

n=1

function **y**=f1(**x**)

H=sqrt(2/L)\*sin(n\*%pi\***x**/L)

**y**=H\***x**\*H

endfunction

i1=intg(l1,l2,f1)

disp(i1,"Expectation value of Position operator is: ")

h=1

function **y**=f2(**x**)

H=sqrt(2/L)\*sin(n\*%pi\***x**/L)

**y**=H\*(-%i\*h)\*derivat(H)

endfunction

i2=intg(l1,l2,f2,0.0001)

disp(i2,"Expectation value of momentum operator is: ")

Output:

Enter lower limit of 1-D box: 2

Enter upper limit of 1-D box: 4

Expectation value of Position operator is:

3.

Expectation value of momentum operator is:

0.