BROWNPATH[T\_,n\_]:=Module[{t,U,R,k,B,t},

t=T/n;

B[0]=0;

t0=0;

Do[

tk=k\*t;

U=RandomVariate[NormalDistribution[0,1],1];

B[tk]=B[tk-1]+Sqrt[t]\*U,

{k,1,n}];

R=Table[B[tk],{k,0,n}]//Flatten;R]

BROWNMONTECARLO[t\_,T\_,n\_]:=Module[{S,t,k},

t=T/n;

S=BROWNPATH[T,n];

t0=0;

Do[

tk=k\*t;

If[tk-1 ttk,U=S[[k]]+(t-tk-1)/(tk-tk-1)\*(S[[k+1]]-S[[k]]);Break[]],

{k,1,n}];U]

BROWN[t\_,n\_]:=Module[{t,apo},

t=t/n;

Do[If[RandomInteger[{0,1}]0,Xi=N[Sqrt[t]],Xi=-N[Sqrt[t]]],{i,1,n}];

apo=Sum[Xi,{i,1,n}]]

BROWNPATHWALK[t\_,n\_]:=Module[{t,apo,oles,X},

t=t/n;

X0=0;

Do[If[RandomInteger[{0,1}]0,Xi=N[Sqrt[t]],Xi=-N[Sqrt[t]]],{i,1,n}];

oles=Table[Sum[Xk,{k,0,j}],{j,0,n}];

oles]

BROWNMONTECARLO[3.85,5,1000]

BROWN[3.85,1000]

gr1=ListPlot[BROWNPATH[5,2000],JoinedTrue, PlotStyleRed];

gr2=ListPlot[BROWNPATHWALK[5,2000],JoinedTrue];

Show[gr1,gr2,PlotRange{{0,2000},{-5,5}}]

1.11487

0.124097

