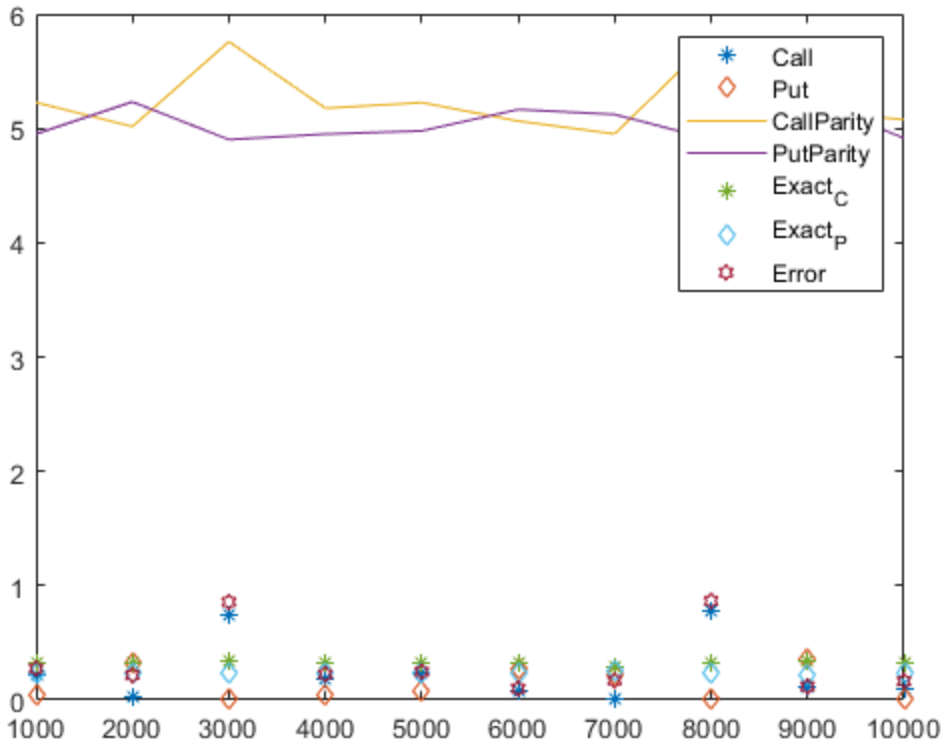
```
clc
clear
k=5; r=.04; v=.2; T=.5; s(1)=5;ic=0;L=1000;R=10^4;m=10^3;step=[L:m:R];
for n=step
    phi=randn(n+1,1);t=T/n;
    for i=1:n
        s0=s(1);
        s(i+1)=s(i)*exp((r-.5*v*v)*t+v*phi(i)*sqrt(t));
        p(i)=(max(k-s(i),0))*exp(-i*r*t);
        c(i)=(max(s(i)-k,0))*exp(-i*r*t);
    end
    ic=ic+1;s0=s(ic);
    Call(ic)=mean(c);Put(ic)=mean(p);     %%%%    Option Values
    CallParity(ic)=Call(ic)+s0;PutParity(ic)=Put(ic)+k*exp(-r*T);;  %%
 Parity Checking
    d1=(log(s0/k)+(r+v^2/2)*T)/(v*sqrt(T));    d2=d1-(v*sqrt(T));
    Nd1=(1+erf(d1/sqrt(2)))/2;              Nd2=(1+erf(d2/sqrt(2)))/2;
    C0(ic)=s0*Nd1-k*exp(-r*T)*Nd2;     P0(ic)=k*exp(-r*T)*(1-Nd2)-
s0*(1-Nd1);

    %N(x)=(1+Erf(x/?2))/2     N(-d1)=1-N(d1)
end

CallOption_____Put___CallParity__PutParity____C0_____P0_Error=[Call'
 Put' CallParity' PutParity' C0' P0',abs(CallParity'-PutParity')] %%%
 Parity checking
plot(step,Call,'*',step,Put,'d',step,CallParity,step,PutParity,step,C0,'*',step,P0
PutParity'),'h')
legend('Call','Put','CallParity','PutParity','Exact_C','Exact_P','Error')
```

```
CallOption_____Put___CallParity__PutParity____C0_____P0_Error =

    0.2257    0.0497    5.2257    4.9507    0.3314    0.2323    0.2750
    0.0235    0.3306    5.0159    5.2316    0.3269    0.2355    0.2157
    0.7464    0.0003    5.7579    4.9013    0.3381    0.2276    0.8567
    0.1842    0.0485    5.1757    4.9495    0.3264    0.2359    0.2262
    0.2315    0.0767    5.2250    4.9777    0.3275    0.2351    0.2473
    0.0806    0.2638    5.0636    5.1648    0.3215    0.2395    0.1012
    0.0116    0.2204    4.9513    5.1214    0.2971    0.2585    0.1701
    0.7784    0.0026    5.7707    4.9036    0.3269    0.2356    0.8671
    0.1176    0.3642    5.1476    5.2652    0.3491    0.2201    0.1176
    0.0938    0.0115    5.0771    4.9125    0.3217    0.2393    0.1646
```



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