Ting Hu

/\* \* 1.a \* \*/  
%let seed=54321;  
%let numobs=1000;  
data geometric(drop=i);  
do p=0.2 to 0.6 by 0.2;  
 call streaminit(&seed);  
 do i=1 to &numobs;  
 x = rand("geometric",p);  
 output;  
 end;  
end;  
run;  
  
/\* \* 1.b \* \*/  
proc sql;  
create table geomnum as  
select p,x,count(\*) as count  
from geometric  
group by p, x  
;  
quit;  
/\* \* 1.c \* \*/

proc sgplot data=geomnum;  
title "plot the trails for each P";  
series x=x y=count /group=p;  
xaxis label= "different x-value";  
yaxis label= "trails numbers";  
run;

/\*\*2.a\*\*/  
  
%let a=-2;  
%let b=2;  
%let resp=1000;  
data unif;  
 call streaminit(&seed);  
 do i=1 to &resp;  
 x = rand("uniform",&a,&b);  
 output;  
 end;  
run;  
/\*\*2.b\*\*/  
proc means data=unif;  
var x;  
run;  
/\*\*2.c\*\*/  
%macro unif\_a\_b(varnm=x,a=0,b=1,seed=54321,obs=100,outdata=unif\_a\_b);  
 data &outdata;  
 call streaminit(&seed);  
 do i=1 to &obs;  
 &varnm = rand("uniform",&a,&b);  
 output;  
 end;  
run;  
%mend unif\_a\_b;  
/\*\*2.d\*\*/  
%unif\_a\_b(varnm=x,a=-1,b=3,seed=54321,obs=1000,outdata=temp)  
/\*\*2.e\*\*/  
proc means data = temp;  
var x;  
run;  
/\*\*3.a\*\*/  
%let resp = 10000;  
proc iml;  
 x=j(&resp,1,.);  
 call randseed(&seed);  
 call randgen(x,"negbinomial",.3,3);  
 create negbin var {x};  
 append from x;  
 close temp;  
quit;  
/\*\*3.b\*\*/  
proc sql;  
create table counts as  
select count(x) as count,x  
from negbin  
group by x;  
quit;  
/\*\*3.c\*\*/  
proc sgplot data=counts;  
title "plot for negbinomial p=0.3,k=3";  
series x=x y=count;  
xaxis label="x\_value";  
yaxis label="x\_counts";  
run;