APPENDIX 2

A-2.1. program for generation from truncated Poisson distribution and to find bias and mean square error-

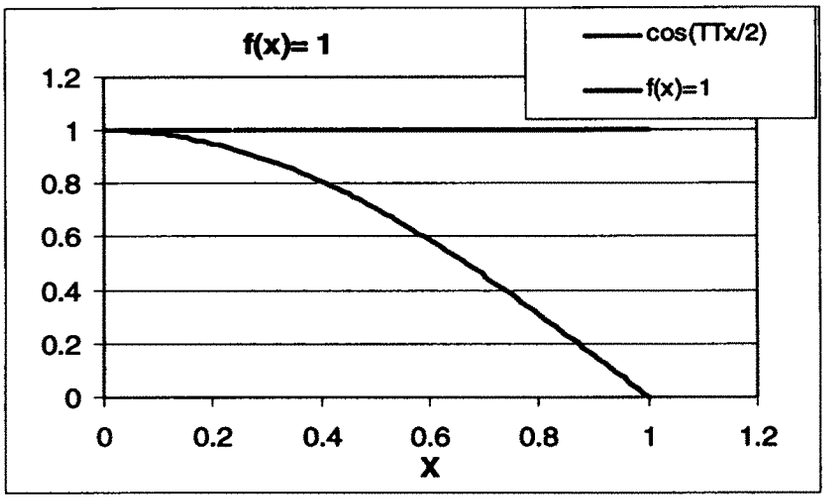
```
//program for generation from truncated Poisson distribution
  #include<stdio.h>
  #include<conio.h>
  #include<stdlib.h>
  #include<math.h>
  #include<stdlib.h>
  void main()
  {
  int i,j,m,x,n,n1;
  float u,l,p,s,f,fd,old,e,nu,d,diff,a,b,s1,s2;
  clrscr();
  randomize();
  printf ("\n Enter lambada, m and Sample size");
  scanf ("%f %d %d", &l, &m, &n1);
  s1=0;s2=0;
  for(j=1;j<=m;j++)
  {
  s=0;
  for(i=1;i<=n1;i++)
  {
    n=0;p=1;
       do
       {
         u=(float)random(RAND_MAX)/RAND_MAX;
         p=p*u;
         n=n+1;
       }
       while (p>exp(-l));
         {x=n-1;}
         if (x>0)
           {s=s+x;}
         else
```

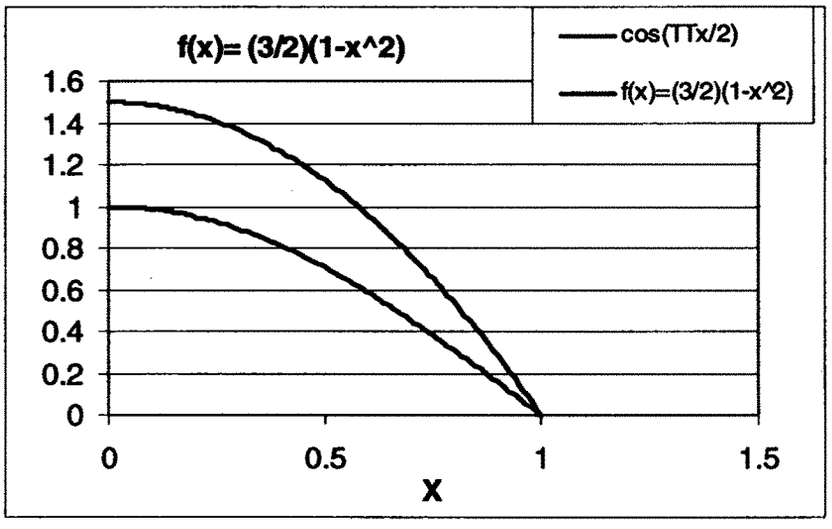
```
            {i=i-1;}
    }
    old=l;
    do
     {
      e= 1-exp(-old);
      f=((-n1*old*e)+(s*e)-(n1*exp(-old)*old))/(old*e);
      fd=((-s*e*e)+(n1*old*old*exp(-old)))/(old*old*e*e);
      nu=old-(f/fd);
      diff=fabs(old-nu);
      old=nu;
     }
   while (diff>0.0001);
   s1=s1+nu;
   s2=s2+(nu*nu);
   printf("\n MLE=%f",nu);
   }
b=(s1/m)-l;
a=(s2/m)-(2*l*s1/m)+(l*l);
   printf ("\n Bias=%f MSE=%f",b,a);
   getch();
}
```

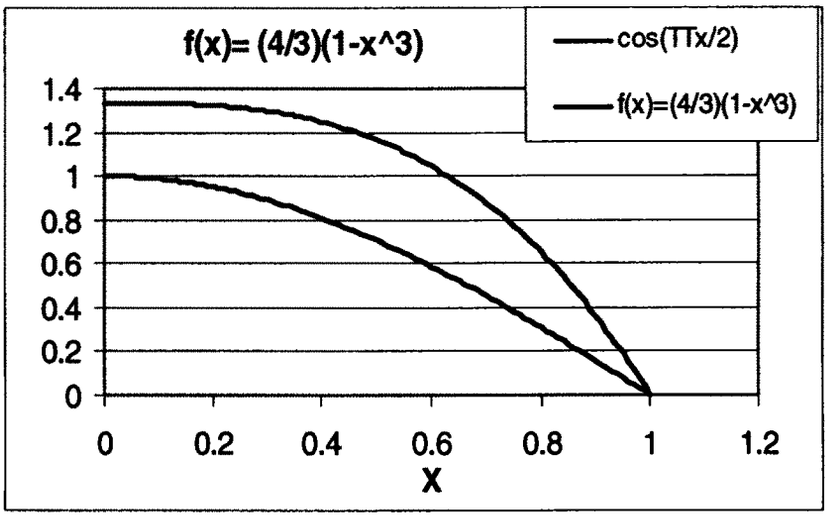
A-2.2 Program to estimate π -

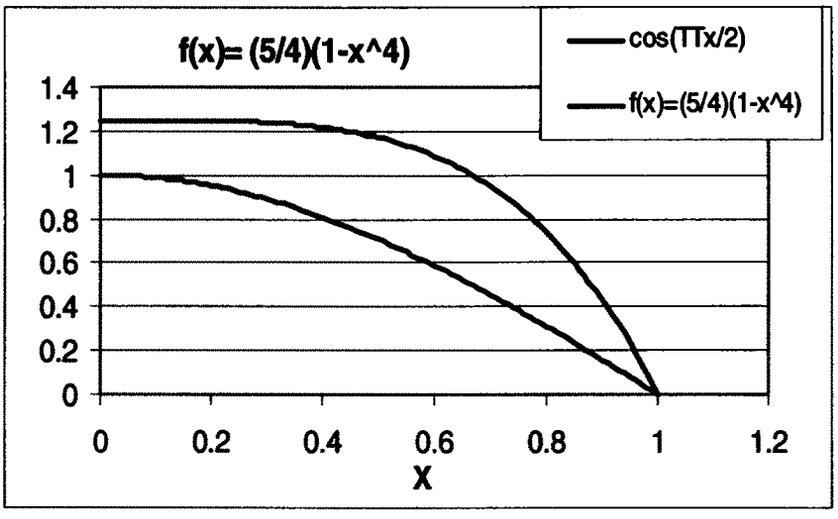
```
/*program to estimate π*/
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#include<math.h>
#include<time.h>
void main()
  {
  int j,n;
  float u1,u2,m,v,p,x,s,sq;
  FILE *fp;
  fp=fopen("pi.xls","w");
  clrscr();
  printf ("\n enter sample size n= ");
  scanf ("%d",&n);
  randomize();
  s=0; sq=0;
  for(j=1;j<=n;j++)
  {
      u1=(float)random(RAND_MAX)/RAND_MAX;
      u2=(float)random(RAND_MAX)/RAND_MAX;
      x = (u1*u1)+(u2*u2);
      if (x<1)
            {s=s+1;
             sq=sq+1;}
      else
             {s=s+0;
             sq=sq+0;}
      fprintf (fp,"\n\s %f  %f",x1,x2);
  }
m=s/n;
p=4*m;
v=(sq/n)-(m*m);
printf("\n Pie = %f Variance= %f",p,v);
fclose (fp);
getch();
}
```

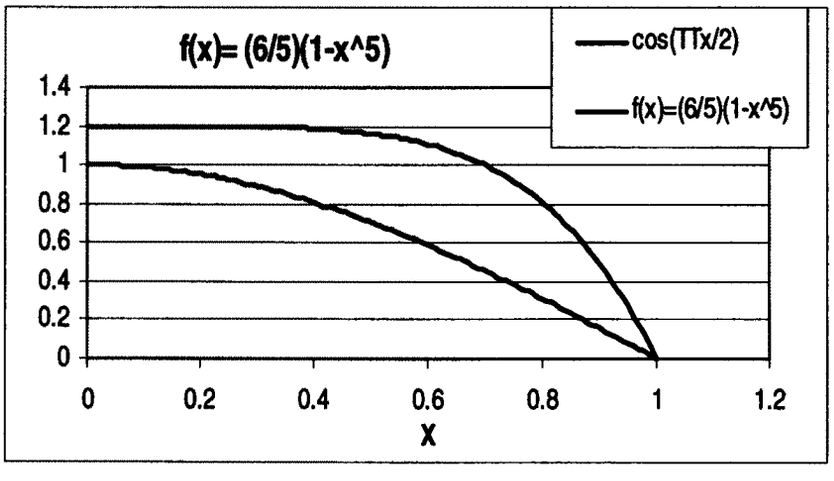
A-2.3. Graphs of various densities and cos ($\pi x/2$) –






f(x)= (4/3)(1-x^3)
cos(TTx/2)
f(x)=(4/3)(1-x^3)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.2
0.4
0.6
0.8
1
1.2
X


f(x)= (5/4)(1-x^4)
cos(TTx/2)
f(x)=(5/4)(1-x^4)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.2
0.4
0.6
0.8
1
1.2
X


f(x)= (6/5)(1-x^5)
cos(TTx/2)
f(x)=(6/5)(1-x^5)
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
0.2
0.4
0.6
0.8
1
1.2
X