積分函數f(x)=exp(-x^2) ,從0 到1 等分割 ,得到

1. Rectangle rule(黎曼左右端點)

左端點:0.753120812 誤差: 0.00629668

右端點:0.740478401 誤差: 0.006345731

1. Trapezoidal rule(梯型法)

梯型法:0.746799607189351

誤差: 2.452562e-05

1. Simpsons rule(辛普森)

辛普森:0.746824134120318

誤差:1.3078906846431e-09

|  |
| --- |
| f<-function(x){exp(-x^2)}  a<-0;b<-1;n<-50  h<-seq(a,b,(b-a)/n)  #Rectangle rule(黎曼左右端點)  right<-0;left<-0  for(i in 2:(n+1)){  right<-right+f(h[i])\*(b-a)/n  left<-left+f(h[i-1])\*(b-a)/n  } |
| #Trapezoidal rule(梯型法)  I\_T<-0  for(i in 2:(n+1)){  I\_T<-I\_T+(f(h[i-1])+f(h[i]))/2  }  I\_T<-I\_T\*(b-a)/n |
| #Simpsons rule(辛普森)  if(n%%2==0){  z1<-0;z2<-0  for(i in 2:(n/2)){ z1<-z1+2\*f(h[2\*i-1]) }  for(i in 1:(n/2)){ z2<-z2+4\*f(h[2\*i]) }  I\_S<-(f(h[1])+f(h[n+1])+z1+z2)\*(b-a)/n/3  rm(z1,z2)  } else {print("n need to be even")} |