TRAPEZOIDAL RULE

PROGRAM 1

c tr.for

f(x)=1/(1+x)

real::h,ul,ll

open(unit=1,file="tr.in")

read(1,\*)ul,ll,h

n=(ul-ll)/h

sum=f(ul)+f(ll)

open(unit=2,file="tr.out")

write(2,\*)"f(x)=1/(1+x)"

write(2,\*)" "

write(2,\*)"ul=",ul

write(2,\*)"ll=",ll

write(2,\*)"h=",h

write(2,\*)" "

write(2,\*)" x y"

do 20 i=0,n

x=ll+i\*h

y=f(ll+i\*h)

write(2,\*)x ,y

20 continue

write(2,\*)" "

do 10 i=1,n-1

sum=sum+2\*f(ll+i\*h)

10 continue

area=sum\*h/2

write(2,\*)"area=",area

close(1)

close(2)

stop

end

INPUT FILE

1.0

0.0

0.25

OUTPUT FILE

f(x)=1/(1+x)

ul= 1.00000000

ll= 0.00000000

h= 0.250000000

x y

0.00000000 1.00000000

0.250000000 0.800000012

0.500000000 0.666666687

0.750000000 0.571428597

1.00000000 0.500000000

area= 0.697023809

PROGRAM 2

c tr1.for

f(x)=(SIN(x)-ALOG(x)+EXP(x))

real::h,ul,ll

open(unit=1,file="tr1.in")

read(1,\*)ul,ll,n

h=(ul-ll)/n

sum=f(ul)+f(ll)

open(unit=2,file="tr1.out")

write(2,\*)"f(x)=(SIN(x)-ALOG(x)+EXP(x))"

write(2,\*)" "

write(2,\*)"ul=",ul

write(2,\*)"ll=",ll

write(2,\*)"n=",n

write(2,\*)" "

write(2,\*)" x y"

do 20 i=0,n

x=ll+i\*h

y=f(ll+i\*h)

write(2,\*)x ,y

20 continue

do 10 i=1,n-1

sum=sum+2\*f(ll+i\*h)

10 continue

area=sum\*h/2

write(2,\*)"area=",area

close(1)

close(2)

stop

end

INPUT FILE

1.400

0.200

6

OUTPUT FILE

f(x)=(SIN(x)-ALOG(x)+EXP(x))

ul= 1.39999998

ll= 0.200000003

n= 6

x y

0.200000003 3.02951002

0.399999976 2.79753375

0.599999964 2.89758682

0.799999952 3.16604066

0.999999940 3.55975270

1.19999993 4.06983423

1.39999998 4.70417786

area= 4.07151794

PROGRAM 3

c trd.for

real,dimension(5)::x,y

open(unit=1,file="trd.in")

read(1,\*)n,h

do 5 i=1,n

read(1,\*) x(i),y(i)

5 continue

open(unit=2,file="trd.out")

c write(2,\*)" "

sum=0

do 10 i=2,n-1

sum=sum+2\*y(i)

10 continue

area=(h/2)\*(y(1)+y(n)+sum)

write(2,\*)"area=",area

close(1)

close(2)

stop

end

INPUT FILE

5

0.25

0.00 1.00

0.25 0.80

0.50 0.66

0.75 0.57

1.00 0.50

OUTPUT FILE

area= 0.694999993