' Mid-rectandle method

' for function f(x)= y(x) = x^2

Dim f(99)

a = 0

b = 1

n = 88

h = (b - a) / n

'

For k = 1 To n

x = a + k \* (b - a) / n - h / 2

v = x ^ 2

f(k) = v

Next k

'

i = 0

For k = 1 To n

i = i + h \* f(k)

Next k

MsgBox i

d1 = Abs(i - 1 / 3)

MsgBox d1

d2 = Abs(1 \* 2 / (24 \* n ^ 2))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' Rectandle method

' for function f(x)= y(x) = x

Dim f(99)

a = 0

b = 1

n = 88

h = (b - a) / n

'

For k = 0 To n

x = a + k \* (b - a) / n

v = x

f(k) = v

Next k

'

i = 0

For k = 0 To n - 1

i = i + h \* f(k)

Next k

MsgBox i

d1 = Abs(i - 1 / 2)

MsgBox d1

d2 = Abs(1 / (2 \* n))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' Trapezoidal rule

' for function f(x)= y(x) = x^2

Dim f(99)

a = 0

b = 1

n = 88

h = (b - a) / n

'

For k = 0 To n

x = a + k \* (b - a) / n

v = x ^ 2

f(k) = v

Next k

'

i = 0

For k = 1 To n - 1

i = i + h \* f(k)

Next k

i = i + (f(0) + f(n)) \* h / 2

MsgBox i

d1 = Abs(i - 1 / 3)

MsgBox d1

d2 = Abs(2 / (12 \* n ^ 2))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' Simpson's rule

' for function f(x)= y(x) = x

Dim f(99)

a = 0

b = 1

n = 8

h = (b - a) / n

'

For k = 0 To n

x = a + k \* (b - a) / n

v = x

f(k) = v

Next k

'

i2j = 0

For j = 1 To n / 2 - 1

i2j = i2j + f(2 \* j)

Next j

'

i2jm1 = 0

For j = 1 To n / 2

i2jm1 = i2jm1 + f(2 \* j - 1)

Next j

'

i = (f(0) + 2 \* i2j + 4 \* i2jm1 + f(n)) \* h / 3

'

MsgBox i

d1 = Abs(i - 0.5)

MsgBox d1

d2 = Abs(1 / (180 \* n ^ 4))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' Rectangles formula

' for function f(x)= y(x) = x

a = 0

b = 1

n = 9

i = 0

h = (b - a) / n

For k = 1 To n

x = a + k \* (b - a) / n

f = x

i = i + h \* f

Next k

MsgBox i

d1 = Abs(i - 0.5)

MsgBox d1

d2 = Abs(1 / (2 \* n))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' Simpson's rule

' for function f(x)= y(x) = x^4

Dim f(99)

a = 0

b = 1

n = 8

h = (b - a) / n

'

For k = 0 To n

x = a + k \* (b - a) / n

v = x ^ 4

f(k) = v

Next k

'

i2j = 0

For j = 1 To n / 2 - 1

i2j = i2j + f(2 \* j)

Next j

'

i2jm1 = 0

For j = 1 To n / 2

i2jm1 = i2jm1 + f(2 \* j - 1)

Next j

'

i = (f(0) + 2 \* i2j + 4 \* i2jm1 + f(n)) \* h / 3

'

MsgBox i

d1 = Abs(i - 1 / 5)

MsgBox d1

d2 = Abs(4 \* 3 \* 2 \* 1 / (180 \* n ^ 4))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

Dim ff(3)

' for function f(x)= y(x) = x

a = 0

b = 1

n = 9

i = 0

h = (b - a) / n

ff(0) = 0

ff(1) = 0.5

ff(2) = 1

i = (b - a) / 6 \* (ff(0) + 4 \* ff(1) + ff(2))

MsgBox i

d1 = Abs(i - 0.5)

MsgBox d1

d2 = Abs(1 / (180 \* n ^ 4))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' for function f(x)= y(x) = x

a = 0

b = 1

n = 9

i = 0

h = (b - a) / n

f0 = 0

fn = 1

For k = 1 To n - 1

f = k \* (b - a) / n

i = i + h \* f

Next k

i = i + (f0 + fn) \* h / 2

MsgBox i

d1 = Abs(i - 0.5)

MsgBox d1

d2 = Abs(1 / (12 \* n ^ 2))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' for function f(x)= y(x) = x^2

a = 0

b = 1

n = 100000

i = 0

h = (b - a) / n

For k = 1 To n

f = (k \* (b - a) / n) ^ 2

i = i + h \* f

Next k

MsgBox i

d1 = Abs(i - 1 / 3)

MsgBox d1

d2 = Abs(2 / (2 \* n))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

' for function f(x)= y(x) = x^3

a = 0

b = 1

n = 100000

i = 0

h = (b - a) / n

For k = 1 To n

f = (k \* (b - a) / n) ^ 3

i = i + h \* f

Next k

MsgBox i

d1 = Abs(i - 1 / 4)

MsgBox d1

d2 = Abs(3 / (2 \* n))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd

-

Dim ff(3)

' for function f(x)= y(x) = x^6

a = 0

b = 1

n = 2

i = 0

h = (b - a) / n

ff(0) = 0

ff(1) = 0.5 ^ 6

ff(2) = 1

i = (b - a) / 6 \* (ff(0) + 4 \* ff(1) + ff(2))

MsgBox i

d1 = Abs(i - 1 / 7)

MsgBox d1

d2 = Abs(6 \* 5 \* 4 \* 3 / (180 \* n ^ 4))

MsgBox d2

dd = Abs(d1 - d2)

MsgBox dd