2018/4/10 实验3

1 在计算机上编程实现 [复化梯形公式] 及 [复化Simpson公式] 的计算,并以课本 例2 检验程序

In [15]:

```
y = [1.0000000, 0.9973978, 0.9896158, 0.9767267, 0.9588510, 0.9361556, 0.9088516, 0.8771925, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0.988516, 0
     2
     3
                    def Tn(a, b):
     4
                                     re = 0.0
     5
                                       div = 1
                                       n = (1en(y) - 1) / div
     6
     7
                                       h = (b - a) * 1.0 / n
     8
                                       for i in range (n * div):
     9
                                                            re += y[i] + y[i + 1]
                                       return re * h / 2
10
11
12
                  print 'Tn = Tn (0, 1)
13
14
                    def Sn(a, b):
15
                                       re = 0.0
                                        div = 2
16
17
                                        n = (1en(y) - 1) / 2
18
                                       h = (b - a) * 1.0 / n
19
                                       for i in range (0, n * div, 2):
20
                                                            re += y[i] + 4 * y[i + 1] + y[i + 2]
21
                                        return re * h / 6
22
               print 'Sn = ', Sn(0, 1)
```

Tn = 0.94569080625 Sn = 0.946083254167

2 在计算机上编程实现 [变步长的梯形法] 的计算,并以课本 例3 检验程序

In [14]:

3 在计算机上编程计算 P88 17、18、20

3-1 17题

2018/4/10 实验3

In [16]:

```
y = [1.00000, 1.65534, 1.55152, 1.06666, 0.72159]
 2
 3
    def Tn(a, b):
        re = 0.0
 4
 5
        div = 1
 6
        n = (1en(y) - 1) / div
 7
        h = (b - a) * 1.0 / n
        for i in range (n * div):
 8
 9
            re += y[i] + y[i + 1]
        return re * h / 2
10
11
   print 'Tn =', Tn(0, 1)
12
13
    def Sn(a, b):
14
        re = 0.0
15
        div = 2
16
        n = (1en(y) - 1) / 2
17
18
        h = (b - a) * 1.0 / n
        for i in range (0, n * div, 2):
19
20
            re += y[i] + 4 * y[i + 1] + y[i + 2]
21
        return re * h / 6
22
   print 'Sn = ', Sn(0, 1)
23
```

Tn = 1.28357875Sn = 1.30938583333

3-2 18题

3-3 20题

编程实现 [Romberg方法] 的计算,并以课本 例4 检验程序