2018/4/3 实验2

1-1 (拉格朗日插值) 利用 100,121,144 的开方值求 sqrt(115)

In [5]:

```
x = [100.0, 121.0, 144.0]
 1
    y = [10.0, 11.0, 12.0]
 3
 4
   a = 115
   result = 0.0
 5
 6
 7
    for i in range (3):
        t = 1.0
 8
 9
        for j in range(3):
10
            if j != i:
                t *= (a - x[j]) / (x[i] - x[j])
11
12
        t *= y[i]
13
        result += t
14
   print result
15
```

10.7227555054

1-2 (拉格朗日插值) 利用所给数据计算正弦积分在 x=0.462 的值

In [6]:

```
1
    x = [0.3, 0.4, 0.5, 0.6, 0.7]
    y = [0.29850, 0.39646, 0.49311, 0.58813, 0.61822]
 3
 4
    a = 0.462
 5
   result = 0.0
 6
 7
    for i in range (5):
 8
        t = 1.0
 9
        for j in range (5):
            if j != i:
10
                t *= (a - x[j]) / (x[i] - x[j])
11
12
        t *= y[i]
13
        result += t
14
15
    print result
```

0.455175505943

2-1 (牛顿插值) 利用 100,121,144 的开方值求 sqrt(115)

2018/4/3 实验2

In [17]:

```
x = [100.0, 121.0, 144.0]
 2
    y = [[10.0, 11.0, 12.0]]
 3
 4
   a = 115
 5
   result = 0
 6
 7
    for i in range (1, 3):
        z = []
 8
        for j in range(3 - i):
 9
            z. append ((y[i-1][j+1]-y[i-1][j]) / (x[j+i]-x[j]))
10
11
        y. append (z)
12
13
    c = []
14
    for i in range(3):
        c. append (y[i][0])
15
16
    for i in range (3):
17
        t = c[i]
18
        for j in range(i):
19
            t *= a - x[j]
20
21
        result += t
22
23
   print result
```

10.7227555054

2-2 (牛顿插值) 利用所给数据计算正弦积分在 x=0.462 的值

In [21]:

```
x = [0.3, 0.4, 0.5, 0.6, 0.7]
    y = [[0.29850, 0.39646, 0.49311, 0.58813, 0.61822]]
 3
 4
    a = 0.462
 5
   result = 0.0
 6
 7
    for i in range (1, 5):
 8
        z = []
 9
        for j in range (5 - i):
            z. append ((y[i-1][j+1]-y[i-1][j]) / (x[j+i]-x[j]))
10
        y. append(z)
11
12
13
    c = []
    for i in range (5):
14
15
        c. append (y[i][0])
16
    for i in range (5):
17
18
        t = c[i]
19
        for j in range(i):
20
            t *= a - x[j]
21
        result += t
22
23
   print result
```

0.455175505943

2018/4/3 实验2

3-1 (拉格朗日插值)

In [22]:

```
1
    x = [-2, -1, 0, 1, 2, 3]
    y = [-5, 1, 1, 1, 7, 25]
 4
    a = 2.25
 5
   result = 0
 6
 7
    for i in range(6):
 8
        t = 1.0
9
        for j in range (6):
            if j != i:
10
                t *= (a - x[j]) / (x[i] - x[j])
11
12
        t *= y[i]
13
        result += t
14
15
    print result
```

10.140625

3-2 (牛顿插值)

In [20]:

```
x = [-2, -1, 0, 1, 2, 3]
 2
   y = [[-5, 1, 1, 1, 7, 25]]
   a = 2.25
 4
 5
   result = 0
 6
 7
    for i in range (1, 6):
        z = []
 8
 9
        for j in range (6 - i):
            z. append ((y[i-1][j+1]-y[i-1][j]) / (x[j+i]-x[j]))
10
11
        y. append(z)
12
   c = []
13
14
    for i in range (6):
15
        c. append (y[i][0])
16
    for i in range (6):
17
        t = c[i]
18
19
        for j in range(i):
20
            t *= a - x[j]
21
        result += t
22
23
    print result
```

10.140625