# Lab7 Report

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## 实验结果

### f1, n=1

```
0.346574        0        0        0        0
0.376019 0.385835        0        0        0
  0.3837 0.38626 0.386288        0        0
0.385644 0.386292 0.386294 0.386294        0
0.386132 0.386294 0.386294 0.386294 0.386294
The result of Romberg's method is 0.386294
```

### f2, n=1

```
3.66831        0        0        0        0        0        0
3.51987  3.4704        0        0        0        0        0
3.48985 3.47984 3.48047        0        0        0        0
3.48714 3.48623 3.48666 3.48676        0        0        0
3.48647 3.48625 3.48625 3.48624 3.48624        0        0
 3.4863 3.48625 3.48625 3.48625 3.48625 3.48625        0
3.48626 3.48625 3.48625 3.48625 3.48625 3.48625 3.48625
The result of Romberg's method is 3.48625
```

### f1, n=4

由于n>1时递归，故打印了多个矩阵，所有的矩阵对应位置的元素加起来就是正常的矩阵

```
0.00736144        0        0
0.00746976 0.00750587        0
0.00749687 0.00750591 0.00750592
0.0213079        0        0
0.0213946 0.0214235        0
0.0214163 0.0214235 0.0214235
0.132872        0        0        0
0.134481 0.135017        0        0
0.134886 0.135021 0.135021        0
0.134987 0.135021 0.135021 0.135021
0.220998        0        0        0
0.222006 0.222343        0        0
0.22226 0.222344 0.222344        0
0.222323 0.222344 0.222344 0.222344
The result of Romberg's method is 0.386294
```

### f2, n=4

由于n>1时递归，故打印了多个矩阵，所有的矩阵对应位置的元素加起来就是正常的矩阵

```
0.490947        0        0        0
0.492686 0.493265        0        0
0.493118 0.493262 0.493261        0
0.493226 0.493262 0.493261 0.493261
0.504953        0        0        0
0.506999 0.507682        0        0
0.507509 0.507678 0.507678        0
0.507636 0.507678 0.507678 0.507678
1.31857        0        0        0        0
1.33132 1.33557        0        0        0
1.33385 1.33469 1.33463        0        0
1.33445 1.33465 1.33465 1.33465        0
 1.3346 1.33465 1.33465 1.33465 1.33465
1.22357        0        0        0        0
1.16746 1.14875        0        0        0
1.15478 1.15056 1.15068        0        0
1.15169 1.15066 1.15066 1.15066        0
1.15092 1.15066 1.15066 1.15066 1.15066
The result of Romberg's method is 3.48625
```

## 结果分析

```
result of n = 1,2,4,8,16,32,64:
0.386294
0.386294
0.386294
0.386294
0.386294
0.386294
0.386294
3.48625
3.48625
3.48625
3.48625
3.48625
3.48625
3.48625
```

不同的n对结果没有影响