

三分法

Ternary Search

Idea: 三分法可以快速求得单峰函数的极值点。以上凸函数为例，三分区间 $[l, r]$ ，设分点为 mid_1, mid_2 ，则若 $f(mid_1) \leq f(mid_2)$ ，极值点定在 $[mid_1, r]$ 中取得；否则，极值点在 $[l, mid_2]$ 中取得。

Code (浮点数版本) :

```
1 double tripartition(double l, double r){
2     double mid1 = l, mid2 = r;
3     while(mid2 - mid1 >= eps){ // eps represents accuracy
4         mid1 = l + (r - l) / 3;
5         mid2 = r - (r - l) / 3;
6         if(func(mid1) <= func(mid2))    l = mid1; // func(x) is a unimodal function
7         else    r = mid2;
8     }
9     return l;
10 }
```

Code (整数版本) :

```
1 int tripartition(int l, int r){
2     int mid1 = l, mid2 = r;
3     while(mid1 < mid2){
4         mid1 = l + (r - l) / 3;
5         mid2 = r - (r - l) / 3;
6         if(func(mid1) < func(mid2)) l = mid1 + 1; // func(x) is a unimodal function
7         else    r = mid2 - 1;
8     }
9     return l;
10 }
```