```cpp
#include <bits/stdc++.h>
using namespace std;
#define MOD (int)(1e9+7)
#define ll long long
```

area of simple polygon in O(N):

```cpp
struct point{
    double x, y;
};

double area(const vector<point>& fig) {
    double res = 0;
    for (unsigned i = 0; i < fig.size(); i++) {
        point p = i ? fig[i - 1] : fig.back();
        point q = fig[i];
        res += (p.x - q.x) * (p.y + q.y);
    }
    return fabs(res) / 2;
}
```

Check if point belongs to the convex polygon in O(log N):

```cpp
struct pt {
    long long x, y;
    pt() {}
    pt(long long _x, long long _y) : x(_x), y(_y) {}
    pt operator+(const pt &p) const { return pt(x + p.x, y + p.y); }
    pt operator-(const pt &p) const { return pt(x - p.x, y - p.y); }
    long long cross(const pt &p) const { return x * p.y - y * p.x; }
    long long dot(const pt &p) const { return x * p.x + y * p.y; }
    long long cross(const pt &a, const pt &b) const { return (a - *this).cross(b - *this); }
    long long dot(const pt &a, const pt &b) const { return (a - *this).dot(b - *this); }
    long long sqrLen() const { return this->dot(*this); }
};

bool lexComp(const pt &l, const pt &r) {
    return l.x < r.x || (l.x == r.x && l.y < r.y);
}

int sgn(long long val) { return val > 0 ? 1 : (val == 0 ? 0 : -1); }

vector<pt> seq;
pt translation;
int n;

bool pointInTriangle(pt a, pt b, pt c, pt point) {
    long long s1 = abs(a.cross(b, c));
    long long s2 = abs(point.cross(a, b)) + abs(point.cross(b, c)) + abs(point.cross(c, a));
    return s1 == s2;
}
```