

# UVa 10079

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## 10079 - Pizza Cutting

- <http://uva.onlinejudge.org/external/100/10079.html>

## Summary

Given the number of straight cuts you can make on a pizza, find the maximum number of pieces in which the pizza can be divided.

## Explanation

If we make no cuts at all, we still have the whole pizza to eat. Hence  $A(0) = 1$ . Each new cut can possibly intersect all the previous cuts. It means that After  $n - 1$  lines have been drawn, the  $n$ th line can intersect each of these, so it has  $n - 1$  intersections, and hence  $n$  new regions, so the recurrence we get is  $A(n) = A(n - 1) + n$ ;  $A(0) = 1$ . Solving this recurrence gives the formula

$A(n) = n + (n - 1) + (n - 2) + \dots + 2 + 1 + A(0)$  and hence  $A(n) = n(n + 1)/2 + 1$ .

## Implementation

- Use 64-bit integers (*long long* in C++) to avoid overflow.

## Input

```
0
5
10
210000000
-100
```

# Output

```
1
16
56
22050000105000001
```

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