Problem C. Circle Union

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

An arrangement of several circles in the plane is *interesting* if there exists a point that lies inside or on the boundary of each circle. The *covered region* of an arrangement consists of all points that lie inside or on the boundary of at least one of the circle.

Consider n circles of radii $r_1, \ldots, r_n$ respectively. Find the largest possible area of the region covered by these circles in an interesting arrangement.

Input

The first line contains a single integer n ($1 \le n \le 10^4$).

The second line contains n integers $r_1, \ldots, r_n$ ($1 \le r_i \le 10^3$).

Output

Print a single real number — the largest possible covered area. Your answer will be considered correct if its absolute or relative error doesn't exceed 10^{-6}.

Example

standard input	standard output
3 10 9 8	726.4578311468