B. Megacity

The administration of the Tomsk Region firmly believes that it's time to become a megacity (that is, get population of one million). Instead of improving the demographic situation, they decided to achieve its goal by expanding the boundaries of the city.

The city of Tomsk can be represented as point on the plane with coordinates $(0; 0)$. The city is surrounded with n other locations, the i-th one has coordinates (x_i, y_i) with the population of k_i people. You can widen the city boundaries to a circle of radius r. In such case all locations inside the circle and on its border are included into the city.

Your goal is to write a program that will determine the minimum radius r, to which is necessary to expand the boundaries of Tomsk, so that it becomes a megacity.

Input

The first line of the input contains two integers n and s ($1 \le n \le 10^3$; $1 \le s < 10^6$) — the number of locatons around Tomsk city and the population of the city. Then n lines follow. The i-th line contains three integers — the x_i and y_i coordinate values of the i-th location and the number k_i of people in it ($1 \le k_i < 10^6$). Each coordinate is an integer and doesn't exceed 10^4 in its absolute value.

It is guaranteed that no two locations are at the same point and no location is at point $(0; 0)$.

Output

In the output, print "−1" (without the quotes), if Tomsk won't be able to become a megacity.
Otherwise, in the first line print a single real number — the minimum radius of the circle that the city needs to expand to in order to become a megacity.

The answer is considered correct if the absolute or relative error don't exceed 10^{-6}.

Examples

input
```
4 999998
1 1 1
2 2 1
3 3 1
2 -2 1
```

output
```
2.8284271
```

input
```
4 999998
1 1 2
2 2 1
3 3 1
2 -2 1
```

output
```
1.4142136
```

input

```
2 1
1 1 999997
2 2 1
```

output

```
-1
```