

Mr. Little Z is on winter vacation, and he has decided to go to the planet Zearth. The only way of traveling through space is by using the aliens' teleportation machines.

Mr. Little Z can teleport directly from planet Earth to the planet Zearth, but it is really risky. The aliens haven't perfected their teleportation machine.

The greater the distance of traveling the bigger is risk. Because of this, the aliens have built more teleportation stations all throughout space. Teleporting through consecutive

teleportation stations lowers the risk. Mr. Little Z wants to go to the planet Zearth using the path where the teleportations are as short as possible - the path where

the longest teleportation on it is minimized. Mr. Little Z opened <http://www.space-net.spc> and found a list of all the space teleportation stations. He decided to use the

least risky path, as described above. Help Mr. Little Z find the safest path from Earth to the planet Zearth: the path where the longest distance he has to teleport is

minimized.

INPUT:

The first line of the standard input contains three real numbers, each from the interval $[-10000.00, 10000.00]$, representing the 3D coordinates of the planet Zearth.

The next line contains a number N , corresponding to the number of teleportation stations in space ($1 \leq N \leq 2000$). Each of the next N lines contains three real numbers

each from the interval $[-10000.00, 10000.00]$, representing the 3D coordinates for each station.

Note: The 3D coordinates of Earth are $(0.0, 0.0, 0.0)$. On the planets Earth and Zearth there are teleportation stations, too.

OUTPUT:

To the standard output write one real number to 2 decimal places, representing the maximum distance of the safest path on Mr. Little Z's way to Zearth.