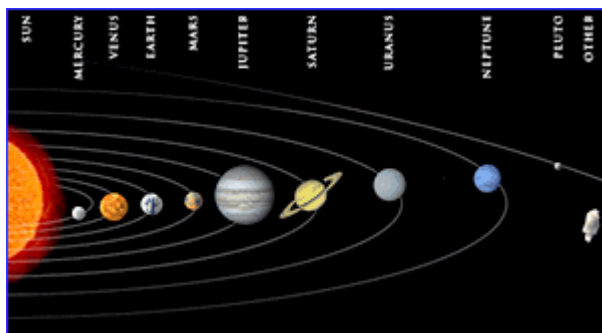


Problem D: How Far?

Time Limit: 4 seconds

Memory Limit: 32 MB



As you probably know, the earth moves round the sun, and the moon moves round the earth. Both the earth and the moon follow elliptical paths. But for this problem, we will consider their paths to be circular. So the earth moves round the sun in a circular path with the sun in the center, and likewise the moon moves round the earth in a circular path with the earth in the center. This same kind of planetary system can be observed elsewhere in the galaxy. So, for a general case, let there are n such bodies $b_1, b_2, b_3, \dots, b_n$, where b_1 moves round the sun, which is stationary, from a distance of r_1 . Body b_2 moves round b_1 from a distance of r_2 , and so on. Body b_i completes a cycle in nonzero-time t_i .

Given the r 's and the t 's, you have to find out the distances d 's of the bodies from the sun at a given time T . At $T = 0$, all the bodies lie in their farthest positions from the sun.

Input

Input consists of multiple test cases. Each case starts with n and T in a line. The following n lines each contains first r_i and then t_i for $i = 1, 2, \dots, n$. Input is terminated by EOF. All the inputs are positive integers. There won't be more than 50 bodies in a single solar system.

Output

For each case, there should a new line. Print all the d 's in that line separated by spaces. Each d should have 4-digits after the decimal point.

Sample Input

```
3 5
20 5
30 5
40 5
```

Sample Output

```
20.0000 50.0000 90.0000
```

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*Man has his will, - but woman has her way.
-- Oliver Wendell Holmes*