

Q6. Intersection Point(s) (15 marks):

A parabolic curve is given by the equation $y = x^2 - 2x - 3$. A linear line with the equation $y = mx + c$ may or may not intersect with the given parabolic curve. Your task is to compute the intersection point(s) between the linear line and the given parabolic curve.

Write a programme to

Input, in sequence, the values of m and c of the linear line $y = mx + c$, where m and c are both real numbers.

Output, in accordance with the following requirement

Case 1: If there is no intersection between the parabolic curve and the linear line, then the output will display “No intersection”.

Case 2: If the parabolic curve intersects with the linear line at a single point, the output will display “One intersection”; the subsequent line will display the intersection point with the x coordinate to be displayed first, followed by a comma, a space, and then the y coordinate.

Case 3: If the parabolic curve intersects with the linear line at two different points, then the output will display “Two intersections” in the first line; subsequently, the second and third lines will be the intersection points, with the larger x coordinate, a comma, a space and the corresponding y coordinate in the second line, and then the smaller x coordinate, a comma, a space and the corresponding y coordinate in the third line.

Note: All coordinate values must be rounded to 7 decimal places; all digits must be displayed.

试题 6. 交点（15 分）：

某抛物线的等式可写为 $y = x^2 - 2x - 3$ 。另一等式为 $y = mx + c$ 的直线，与给定的抛物线有可能相交。你的任务是找出这条直线和给定抛物线的交点。

试写一程式以

依序输入, m 和 c 的值，已知两者皆为实数，且它们是组成直线 $y = mx + c$ 的参数。

根据以下要求输出

情况 1: 假如直线和给定的抛物线没有交点，则输出 “No intersection”。

情况 2: 假如直线和给定的抛物线只有一个交点，则第一行输出 “One intersection”；在接着的一行中显示交点的坐标，即，先输出 x 的值，跟着一个逗号，一个空格，再输出 y 的值。

情况 3: 假如直线和给定的抛物线有两个交点，则第一行输出 “Two intersections”；接着第二行输出 x 值较大的交点坐标（格式为： x , 逗号, 空格, 以及对应的 y ），然后第三行则输出 x 值较小的交点坐标（格式为： x , 逗号, 空格, 以及对应的 y ）。

注意： 所有坐标值必须近似并显示至小数点后 7 位数。

Example (例子)

Sample Input	Sample Output
0.5 1	Two intersections 3.6084953, 2.8042476 -1.1084953, 0.4457524
0 0	Two intersections 3.0000000, 0.0000000 -1.0000000, 0.0000000
1 -10	No intersection
0 -4	One intersection 1.0000000, -4.0000000

All Test Cases (所有测试用的例子)

Sample Input	Sample Output
0.5 1	Two intersections 3.6084953, 2.8042476 -1.1084953, 0.4457524
0 0	Two intersections 3.0000000, 0.0000000 -1.0000000, 0.0000000
1 -10	No intersection
0 -4	One intersection 1.0000000, -4.0000000
-1 0	Two intersections 2.3027756, -2.3027756 -1.3027756, 1.3027756
-1 -3	Two intersections 1.0000000, -4.0000000 0.0000000, -3.0000000
0 20	Two intersections 5.8989795, 20.0000000 -3.8989795, 20.0000000
0.687 -5	No intersection
-1.234 -2.345	Two intersections 1.2783709, -3.9225097 -0.5123709, -1.7127343
0.678 -5.7652	No intersection