2874 Approaching the sine function.

Let

$$S(x,n) = \sum_{k=0}^{n} \frac{(-1)^k x^{2k+1}}{(2k+1)!} \text{ and note that } \mathrm{Lim}_{n\to\infty} S(x,n) = \sin(x)$$

Write a program that finds the minimum value n so that, for a given real value x and an integer d, we have that both $S(x,n)$ and $\sin(x)$, rounded to d decimal places, coincide.

For example, given $x = 1$ and $d = 5$, then since:

$$\begin{aligned} \sin(1) &\approx 0.841470985 \text{rounded to 5 decimal places is } 0.84147, \text{ and} \\ S(1,3) = \frac{4241}{5040} &\approx 0.841468254 \text{rounded to 5 decimal places is } 0.84147, \text{ but} \\ S(1,2) = \frac{101}{120} &\approx 0.841666667 \text{rounded to 5 decimal places is } 0.84167, \end{aligned}$$

then 4 terms of the sum $\sum_{k=0}^{n} \frac{(-1)^k x^{2k+1}}{(2k+1)!}$, (i.e., $k = 0, 1, 2, 3$) are enough for approximating $\sin(1)$ to five decimal places. That is, the minimum value for n, in this case is 3.

Input

Each line of an input text file contains two numbers x d. Process them until the end of file.

Output

For each input line output a single integer n.

Sample Input

```
1 5
3.1416 7
-4 2
0 12
```

Sample Output

```
3
8
6
0
```