Problem A

An Easy Calculus Question

Time Limit: 1 second

The *International Calculus Problem Committee* has generously donated a problem for today's contest. Let's all say thank you to them!

Let a, b, c, and d be real constants. Now, let the piecewise function f be defined on all real numbers x as follows:

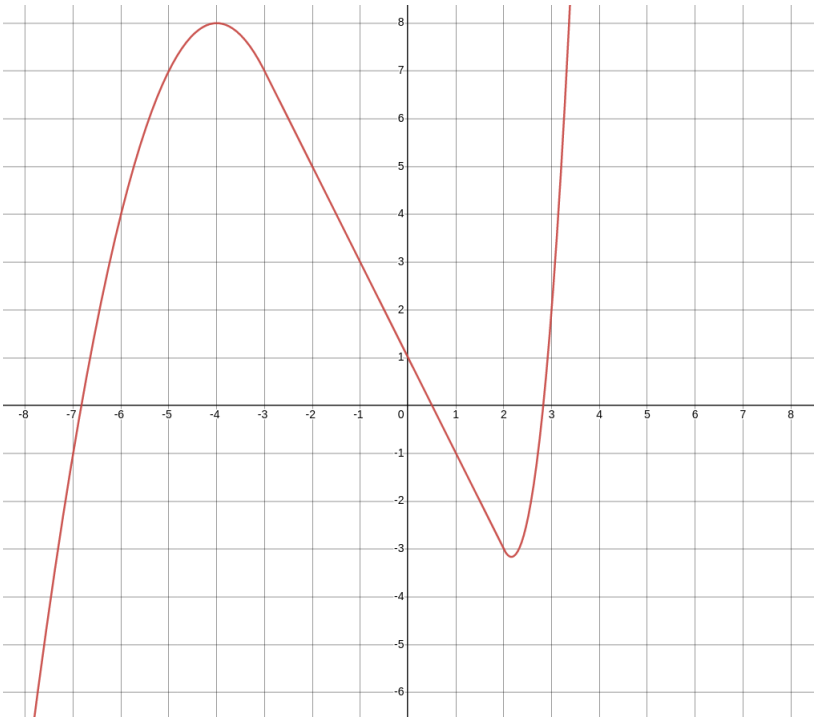
$$f(x) = \begin{cases} -(x+4)^2 + 8, & \text{if } x \in (-\infty, -3], \\ ax + b, & \text{if } x \in (-3, 2], \\ x^3 + cx + d, & \text{if } x \in (2, +\infty). \end{cases}$$

Furthermore, you are told that f is *differentiable everywhere*. We can show that there actually exists exactly one set of values for a, b, c, and d for which f is differentiable everywhere, and therefore this condition is sufficient to uniquely determine f.

This is the task: Given some integer x as input, output the value of $f(x)$. It is possible to show that if x is an integer, then the value of $f(x)$ will also always be an integer.

Actually, wait a minute, the Chief Judge says that this question isn't appropriate because this is a programming competition, not a calculus class.

So, to make things fair, we'll also give you a **HINT**: f is differentiable everywhere if and only if $a = -2$, $b = 1$, $c = -14$, and $d = 17$. *These are the values that you should use for f.* Look, I'll even show you the graph of the function in order to prove that it's differentiable everywhere.



The graph of $y = f(x)$ if we take $a = -2$, $b = 1$, $c = -14$, and $d = 17$. We can see that the function is differentiable everywhere. This image was generated using Desmos.

Input Format

Input consists of only a single line containing the integer x.

Constraints

- $-10 \leq x \leq 10$

Note: Constraints are *guaranteed* to be true. You don't have to check them; you may simply assume them to be true.

Output Format

Output a single integer, the value of f when evaluated at the given x.

We remind you to **not** output the decimal point or any places after the decimal point.

Sample Input 1	Sample Output 1
−7	−1

Sample Input 2	Sample Output 2
0	1

Sample Input 3	Sample Output 3
3	2

Explanation

In the third sample input, we wish to evaluate $f(3)$. By the definition of the piecewise function, because $3 \in (2, +\infty)$, we are going to evaluate $x^3 + cx + d$ at $x = 3$. Using the values of c and d given in the hint, we arrive at the value of,

$$3^3 + (-14)3 + 17 = 27 - 42 + 17 = 2.$$