

**Exercise – Maximize it!**

Your company often needs to solve simple optimization problems of two types.

$$(1) \quad \max \quad b \cdot y - a \cdot x$$

$$\text{s.t. } x, y \geq 0$$

$$x + y \leq 4$$

$$4x + 2y \leq ab$$

$$-x + y \leq 1$$

$$(2) \quad \min \quad a \cdot x + b \cdot y + z$$

$$\text{s.t. } x, y, z \leq 0$$

$$x + y \geq -4$$

$$4x + 2y + z \geq -ab$$

$$-x + y \geq -1$$

For any values of parameters  $a$  and  $b$ , find the optimal value.

**Input** The input consist of several test sets. Each test set is on a separate line, consisting of three values  $p \ a \ b$ , where  $p$  is the type of the problem to solve ( $p \in \{1, 2\}$ ) and  $a, b$  are the values of the parameters ( $0 \leq a \leq 100$  and  $-100 \leq b \leq 100$ ). The input is terminated by a line containing only 0.

**Output** For each test set, write on a separate line the optimal value of the problem of type  $p$  with parameters  $a, b$ , rounded down to the next integer for the maximization problem, and rounded up to the next integer for the minimization problem. If there is no solution, write no and if there are solutions of arbitrarily high value (arbitrarily low for minimization), then output unbounded.

**Sample Input**

```
1 1 1
1 3 -3
2 1 1
2 2 1
0
```

**Sample Output**

```
0
no
-1
-2
```