C. Anton and Making Potions

time limit per test: 4 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

Anton is playing a very interesting computer game, but now he is stuck at one of the levels. To pass to the next level he has to prepare n potions.

Anton has a special kettle, that can prepare one potions in x seconds. Also, he knows spells of two types that can faster the process of preparing potions.

1. Spells of this type speed up the preparation time of one potion. There are m spells of this type, the i-th of them costs b_i manapoints and changes the preparation time of each potion to a_i instead of x.
2. Spells of this type immediately prepare some number of potions. There are k such spells, the i-th of them costs d_i manapoints and instantly create c_i potions.

Anton can use **no more than one** spell of the first type and **no more than one** spell of the second type, and the total number of manapoints spent should not exceed s. Consider that all spells are used instantly and right before Anton starts to prepare potions.

Anton wants to get to the next level as fast as possible, so he is interested in the minimum number of time he needs to spent in order to prepare at least n potions.

Input

The first line of the input contains three integers n, m, k ($1 \le n \le 2 \cdot 10^9, 1 \le m, k \le 2 \cdot 10^5$) — the number of potions, Anton has to make, the number of spells of the first type and the number of spells of the second type.

The second line of the input contains two integers x and s ($2 \le x \le 2 \cdot 10^9, 1 \le s \le 2 \cdot 10^9$) — the initial number of seconds required to prepare one potion and the number of manapoints Anton can use.

The third line contains m integers a_i ($1 \le a_i < x$) — the number of seconds it will take to prepare one potion if the i-th spell of the first type is used.

The fourth line contains m integers b_i ($1 \le b_i \le 2 \cdot 10^9$) — the number of manapoints to use the i-th spell of the first type.

There are k integers c_i ($1 \le c_i \le n$) in the fifth line — the number of potions that will be immediately created if the i-th spell of the second type is used. It's guaranteed that c_i are **not decreasing**, i.e. $c_i \le c_j$ if $i < j$.

The sixth line contains k integers d_i ($1 \le d_i \le 2 \cdot 10^9$) — the number of manapoints required to use the i-th spell of the second type. It's guaranteed that d_i are **not decreasing**, i.e. $d_i \le d_j$ if $i < j$.

Output

Print one integer — the minimum time one has to spent in order to prepare n potions.

Examples

input
20 3 2 10 99 2 4 3 20 10 40 4 15 10 80

output
20

input
20 3 2 10 99 2 4 3 200 100 400 4 15 100 800

output
200

Note

In the first sample, the optimum answer is to use the second spell of the first type that costs 10 manapoints. Thus, the preparation time of each potion changes to 4 seconds. Also, Anton should use the second spell of the second type to instantly prepare 15 potions spending 80 manapoints. The total number of manapoints used is $10 + 80 = 90$, and the preparation time is $4 \cdot 5 = 20$ seconds (15 potions were prepared instantly, and the remaining 5 will take 4 seconds each).

In the second sample, Anton can't use any of the spells, so he just prepares 20 potions, spending 10 seconds on each of them and the answer is $20 \cdot 10 = 200$.