
Advertisement Profit

Input file: **standard input**
Output file: **standard output**
Time limit: 1 second
Memory limit: 512 megabytes

Pashka is a popular vlogger. Currently there are 10 000 subscribers on his channel. He decided to plan next month releases.

Videos come in two types: regular and commercial. Pashka has n regular videos and m commercial videos. He can release the videos in any order he likes. Since Pashka is a top content maker, after the release of the i -th regular video, the number of subscribers on his channel will increase by a positive integer a_i . However, after the release of the i -th commercial video, the number of subscribers on its channel will decrease by a positive integer b_i . At the same time, if Pashka releases the i -th commercial video, and at that moment there will be s subscribers on his channel, the company that ordered this commercial will pay him $s \cdot c_i$ cents. It is guaranteed that even if Pashka releases all planned commercial videos and only them, the number of subscribers on the channel will remain nonnegative.

Pashka has not yet decided how many videos to release next month: he has q options. Each option is characterized by a single integer d_i — the number of videos that he wants to release. Now he asks you for each option to determine what maximum profit he can get.

Input

The first line contains a single integer n — the number of regular videos ($0 \leq n \leq 100$). Next n lines contain a single integer a_i — the change in the number of subscribers after the release of the i -th regular video ($1 \leq a_i \leq 100$).

Next line contains a single integer m — the number of prepared commercial videos ($0 \leq m \leq 100$). Next m lines contain two integers c_i and b_i — the number of cents that the company will pay for each subscriber at the time of the release of the video, and the change in the number of subscribers after the release of the i -th commercial video ($1 \leq c_i, b_i \leq 100$).

Next line contains a single integer q — the number of different options that Pashka wants to check ($1 \leq q \leq n + m + 1$). Next q lines contain a single integer d_i — the number of videos Pashka wants to release next month ($0 \leq d_i \leq n + m$). It is guaranteed that all d_i are different.

Output

For each option, output a single number — the maximum profit in cents that Pashka can get if he releases exactly d_i clips.

Scoring

Subtask	Score	Constraints			
		n	m	q	Additional
1	10	$n \leq 5$	$m \leq 5$	$q \leq n + m + 1$	—
2	11	$n \leq 100$	$m \leq 5$	$q \leq n + m + 1$	—
3	16	$n \leq 100$	$m \leq 100$	$q = 1$	$d_1 = n + m$
4	17	$n = 0$	$m \leq 100$	$q \leq n + m + 1$	—
5	19	$n \leq 100$	$m \leq 30$	$q \leq n + m + 1$	$c_i, b_i \leq 10$
6	27	$n \leq 100$	$m \leq 100$	$q \leq n + m + 1$	—

Examples

standard input	standard output
1	0
10	200000
2	299900
10 20	300200
20 10	
4	
0	
1	
2	
3	
3	0
10	150000
40	199900
30	209870
3	210710
5 10	211340
15 20	211550
1 100	
7	
0	
1	
2	
3	
4	
5	
6	

Explanation

In the first example, if Pashka releases only one video, he should release the second commercial video, and then he will earn $10\,000 \cdot 20 = 200\,000$. If he wants to release two videos, then first he should release the second commercial video, and then the first commercial video. In this case, his profit will be equal to $10\,000 \cdot 20 + 9\,990 \cdot 10 = 299\,900$. If he wants to release all three videos, then first he should release a regular video, then the second commercial video, and then the first commercial video. The profit will be equal to $10\,010 \cdot 20 + 10\,000 \cdot 10 = 300\,200$.