Problem A: Gold rush

Time limit: 8s, memory limit: 1GB.

You bought a parcel. You leased heavy machinery. You hired workers. Now you are ready to start mining gold. To make the process more organized, you divided your parcel into n rows and m columns. You created nm sectors - one sector in each location where a column intersects a row. Each sector was assigned a pair of coordinates (r, c), meaning that it lies on the intersection of the r-th row and the c-th column. The upper left sector of the parcel was assigned the pair $(1, 1)$, while the lower right one was assigned the pair (n, m).

You obtained three different expertises on how deep the gold is located. One for rows of your parcel, one for columns and one for diagonals (i.e. one number for every row, one for every column and one for every diagonal). It is certain that the gold in each sector lies on one of the three estimated depths. As an experienced prospector, you know that before starting to mine, you need to consider all possible scenarios. You can measure the difficulty of a given scenario as the sum of depths of gold deposits over all of its sectors. You can clearly see that in the most favorable scenario gold in each sector will be as shallow as possible, while in the worst one gold will be as deep as can be.

In order to approximate your potential earnings, you need to calculate the difference between the difficulty of the worst case scenario and that of the best case scenario. The summer in Klondike is short, so you'd better hurry!

Input

The first line of input contains the number of test cases z ($1 \leqslant z \leqslant 2\,000$). The descriptions of the test cases follow.

The first line of a test case contains two integers n, m ($1 \leqslant n, m \leqslant 500\,000$) – the number of rows and columns, respectively.

The second line contains n integers r_i ($1 \leqslant r_i \leqslant 10^6$) – the estimated depth on which gold is located in the i-th row.

The third line contains m integers c_i ($1 \leqslant c_i \leqslant 10^6$) – the estimated depth on which gold is located in the i-th column.

The last line contains $n + m - 1$ integers d_i ($1 \leqslant d_i \leqslant 10^6$) – the estimated depth on which gold is located in the i-th diagonal. Sectors (r, c) satisfying the equation $c - r + n = i$ belong to the i-th diagonal.

The total number of rows and columns in all test cases does not exceed $2\,000\,000$.

Output

For each test case, print the difference between the difficulty of the worst case scenario and that of the best case scenario.

Example

For an example input:	the correct output is:
2 2 2 2 8 7 3 6 4 5 3 4 5 1 6 4 2 2 6 5 9 8 1 8 7	15 59

Explanation

In the first test case, the difficulty of the worst case scenario equals $7 + 5 + 8 + 8 = 28$. The best case scenario's difficulty is $2 + 2 + 6 + 3 = 13$, so the answer is $28 - 13 = 15$.

In the second test case, the difficulties are 84 and 25 for the worst case and the best case scenario, respectively. Thus, giving $84 - 25 = 59$ as the result.