A polynomial $p(x)$ of degree n can be used to approximate a function $f(x)$ by setting the coeficients $p(x)$ to match the first n coeficients of the power series of $f(x)$ (expanded about $x = 0$). For examp

$$\frac{1}{(1-x)} \approx 1 + x + x^2 + \ldots + x^n$$

Unfortunately, polynomials are "nice" and they do not work well when they are used to appro mate functions that behave poorly (e.g. those with singularities). To overcome this problem, we c instead approximate functions by rational functions of the form $p(x)/q(x)$, where $p(x)$ and $q(x)$ a polynomials. You have been asked by Approximate Calculation Machinery to solve this problem, they can incorporate your solution into their approximate calculation software.

Given m, n, and the first $m+n$ coeficients of the power series of $f(x)$, we wish to compute t polynomials $p(x)$ and $q(x)$ of degrees at most $m-1$ and $n-1$, respectively, such that the power seri expansion of $q(x) \cdot f(x) - p(x)$ has 0 as its first $m+n-1$ coefficients, and 1 as its coefficient correspondi to the x^{m+n-1} term. In other words, we want to find $p(x)$ and $q(x)$ such that

$$q(x) \cdot f(x) - p(x) = x^{m+n-1} + \ldots$$

where $\ldots$ contains terms with powers of x higher than $m+n-1$. From this, $f(x)$ can be approximat by $p(x)/q(x)$.

Background Definitions

A polynomial $p(x)$ of degree n can be written as $p_0 + p_1 x + p_2 x^2 + \ldots + p_n x^n$, where p_i's are intege in this problem.

A power series expansion of $f(x)$ about 0 can be written as $f_0 + f_1 x + f_2 x^2 + \ldots$, where f_i's a integers in this problem.

Input

The input will consist of multiple cases. Each case will be specified on one line, in the form $m\ n\ f_0\ f_1 \ldots$ where f_i is the coefficient of x^i in the power series expansion of f. You may assume that $1 \leq$ $1 \leq n \leq 4$, $2 \leq m+n \leq 10$, and f_i are integers such that $|f_i| \leq 5$. The end of input will be indicated a line containing $m = n = 0$, and no coefficients for f. You may assume that there is a unique soluti for the given input.

Output

For each test case, print two lines of output. Print the polynomial $p(x)$ on the first line, and then $q($ on the second line. The polynomial $p(x)$ should be printed as a list of pairs (p_i, i) arranged in ascendi order in i, such that p_i is a non-zero coefficient for the term x^i. Each non-zero coefficient p_i should printed as 'a/b', where $b > 0$ and a/b is the coefficient expressed in lowest terms. In addition, if $b =$ then print only a (and omit b). If $p(x) = 0$, print a line containing only '`(0,0)`'. Separate the pairs the list by one space. The polynomial $q(x)$ should be printed in the same manner. Insert a blank li between cases.

Sample Input

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2 2 0 0 1 1
4 2 1 2 3 4 5 -2
1 1 2 3
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1 4 -5 0 -2 1-2
0 0
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Sample Output

```
(0,0)
(1,1)

(-4/33,0) (-1/11,1) (-2/33,2) (-1/33,3)
(-4/33,0) (5/33,1)

(2/3,0)
(1/3,0)

(25/6,0)
(-5/6,0) (1/3,2) (-1/6,3)
```