Consider an N-degree polynomial, expressed as follows:

**P**N \* xN + **P**N-1 \* xN-1 + ... + **P**1 \* x1 + **P**0 \* x0

You'd like to find all of the polynomial's x-intercepts — in other words, all distinct real values of x for which the expression evaluates to 0.

Unfortunately, the order of operations has been reversed: Addition (**+**) now has the highest precedence, followed by multiplication (**\***), followed by exponentiation (**^**). In other words, an expression like ab + c \* d should be evaluated as a((b+c)\*d). For our purposes, exponentiation is right-associative (in other words, abc = a(bc)), and 00 = 1. The unary negation operator still has the highest precedence, so the expression -2-3 \* -1 + -2 evaluates to -2(-3 \* (-1 + -2)) = -29 = -512.

**Input**

Input begins with an integer **T**, the number of polynomials. For each polynomial, there is first a line containing the integer **N**, the degree of the polynomial. Then, **N**+1 lines follow. The *i*th of these lines contains the integer **Pi-1**.

**Output**

For the *i*th polynomial, print a line containing "Case #*i*: **K**", where **K** is the number of distinct real values of **x** for which the polynomial evaluates to 0. Then print **K** lines, each containing such a value of **x**, in increasing order.

Absolute and relative errors of up to 10-6 will be ignored.

**Constraints**

1 ≤ **T** ≤ 200   
0 ≤ **N** ≤ 50   
-50 ≤ **Pi** ≤ 50   
**PN** ≠ 0

**Explanation of Sample**

In the first case, the polynomial is 1 \* x1 + 1 \* x0. With the order of operations reversed, this is evaluated as (1 \* x)(((1 + 1) \* x)0), which is equal to 0 only when x = 0.

In the second case, the polynomial does not evaluate to 0 for any real value x.