

Question: 02

Polynomial equation $F(x)$ having roots real-positive ,real-negative and imaginary .
You have to find three factor $f_1(x)$, $f_2(x)$ and $f_3(x)$ such that

$$f_1(x) * f_2(x) * f_3(x) = F(x);$$

all roots of $f_1(x)$ are positive, real number with including 0,

all roots of $f_2(x)$ are negative, real number,

and all roots of $f_3(x)$ are imaginary.

Input:

t =number of test case;

Y = coefficient sequence of $N+1$; exp:- **equation $x^4 + 2*x^3 + 4*x^2 - 2*x - 5$**
coefficient sequence is [1 2 4 -2 -5]

Output:

$f_1(x)$, $f_2(x)$ and $f_3(x)$ = algebraic equations ;

Sample input:

1

[1 2 4 -2 -5]

Sample output:-

$F_1=(x-1)$

$F_2=(x+1)$

$F_3=(x-1-2*i)*(x-1+2*i)$