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Chapter 1

Functions

1.1 prime_decomp – prime decomposition

1.1.1 prime_decomp – prime decomposition

prime_decomp(*p*: Integer, polynomial: list) → list

Return prime decomposition of the ideal (*p*) over the number field $\mathbf{Q}[x]/(\text{polynomial})$.

p should be a (rational) prime. polynomial should be a list of integers which defines a monic irreducible polynomial.

This method returns a list of (P_k, e_k, f_k) ,

where P_k is an instance of **Ideal_with_generator** expresses a prime ideal which divides (*p*), e_k is the ramification index of P_k , f_k is the residue degree of P_k .

Examples

```
>>> for fact in prime_decomp.prime_decomp(3,[1,9,0,1]):
...     print fact
...
(Ideal_with_generator([BasicAlgNumber([[3, 0, 0], 1], [1, 9, 0, 1]), BasicAlgNum
ber([[7L, 20L, 4L], 3L], [1, 9, 0, 1])]), 1, 1)
(Ideal_with_generator([BasicAlgNumber([[3, 0, 0], 1], [1, 9, 0, 1]), BasicAlgNum
ber([[10L, 20L, 4L], 3L], [1, 9, 0, 1])]), 2, 1)
```

Bibliography