

Appendix 5: Pictures of prime numbers and ideals for complex fields of class number 2

The pictures show the quadratic character and a picture of **prime numbers**, **units** and **non-principal prime ideals** for some complex quadratic fields of class number 2, namely

the fields of discriminant congruent 0 modulo 4:

$$\mathbb{Q}(\sqrt{-5}), \mathbb{Q}(\sqrt{-6}), \mathbb{Q}(\sqrt{-10}), \mathbb{Q}(\sqrt{-13}), \mathbb{Q}(\sqrt{-22})$$

and the fields of discriminant congruent 1 modulo 4:

$$\mathbb{Q}(\sqrt{-15}), \mathbb{Q}(\sqrt{-35}), \mathbb{Q}(\sqrt{-51}), \mathbb{Q}(\sqrt{-91}), \mathbb{Q}(\sqrt{-115}), \mathbb{Q}(\sqrt{-123}), \mathbb{Q}(\sqrt{-187}), \mathbb{Q}(\sqrt{-235}).$$

The pictures display the prime numbers, which generate the principal prime ideals, but not those irreducible numbers which are not prime.

Moreover, the non-principal prime ideals are displayed as follows.

The non-principal ideals are obtained by dividing principal ideals by a certain non-principal prime ideal, I , generated by its norm and some integer of $\mathbb{Q}(\sqrt{r})$. In the picture, the non-principal prime ideals then are represented by those numbers whose norm is equal to a prime norm times the norm of I . This norm of I is mentioned at the top of the picture.





