

Appendix 6: Pictures of prime numbers and ideals for real 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 real quadratic fields of class number 2, namely

the fields of discriminant congruent 0 modulo 4:

$$\mathbb{Q}(\sqrt{10}), \mathbb{Q}(\sqrt{15}), \mathbb{Q}(\sqrt{26}), \mathbb{Q}(\sqrt{30}), \mathbb{Q}(\sqrt{34}), \mathbb{Q}(\sqrt{35}), \mathbb{Q}(\sqrt{39})$$

and the fields of discriminant congruent 1 modulo 4:

$$\mathbb{Q}(\sqrt{65}), \mathbb{Q}(\sqrt{85}), \mathbb{Q}(\sqrt{105}).$$

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.



