

# Finite field extensions

**Theorem 1.** Let  $L/K$  be a finite field extension, and  $v \in M_K$  an absolute value on  $K$ . Then we have

$$\sum_{w|v} e(w/v)f(w/v) = [L : K].$$

Let  $L/K$  be a finite field extension, and  $v \in M_K$  an absolute value on  $K$ . We have

$$L \otimes_K K_v \cong \prod_{w|v} L_w^{e(w/v)},$$

where the product is taken over all absolute values  $w \in M_L$  extending  $v$ .

**Definition 2.** Yang: To be added.

## Appendix