Contents

1 Weil Reciprocity

$$f(\mathrm{div}(g)) = g(\mathrm{div}(f))$$

NOTE: cannot find proof

2 Divisor Construction

We can either use the Miller loop, or Mumford polynomial representation. Both are trivial.

We end up with a polynomial f that represents our divisor.

3 Proving Interpolation

Let $f \in K(C)^\times$, with roots $P_1, ..., P_n$. Then the norm

$$f(P)f(-P) = (x(P) - x(P_1)) \cdots (x(P) - x(P_n))$$

Canonical form is $f(x, y) = v(x) + yw(x)$. The conjugate of f is $\bar{f} = v(x) - yw(x)$ and the norm is

$$N_f = f \cdot \bar{f} = v(x)^2 - (x^3 + Ax + B)w(x)^2$$

For $r = \frac{f}{g} \in K(C)$

$$\frac{f}{g} = \frac{fg}{gg} = \frac{fg}{N_g}$$

But this norm also counts $-P$ which we want to disallow. We instead use the resultant.