

Eine Woche, ein Beispiel

5.11 genus of generalized Fermat curve

- Goal.
1. Find a basis of $H^{p,q}(X)$ by harmonic forms.
 2. Compute the geometric genus of curves

$$C: = \{y^n = x^m - 1\} \subseteq \mathbb{P}^2$$

Rmk: [2024.11.03] try to compute a special case in detail. In this document, more advanced methods are applied, so we don't need to blow up explicitly.
The reference also follows [2024.11.03].

Extra Ref:

Generalised Fermat equation: a survey of solved cases
<https://arxiv.org/abs/2412.11933>

Connection between Fermat curve and hyperelliptic curve:
<https://math.stackexchange.com/questions/3493593/transformation-which-takes-fermat-curve-x^n-y^n-1-to-a-hyperelliptic-curve>

1. Harmonic forms

- Affine plane curve
- Plane curve
- Fermat curve
- Hyperelliptic curve
- generalized Fermat curve
- \mathbb{P}^n
- Hypersurface

2. Riemann - Hurwitz

3. Milnor formula