

# My formalization project

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**Lemma 1.**  $m_M(x) \equiv 2 \pmod{3}$ .

**Lemma 2.**  $m_M(x) \equiv x^n - 1 \pmod{3}$ .

**Lemma 3.**

**Lemma 4.**  $m_M(x) \equiv 1 \pmod{3}$ ,  $n \geq i \geq i \geq \Phi_i(x) \pmod{3}$ .

**Lemma 5.**  $n \equiv \Phi_n(x) \pmod{3}$ ,  $\phi(n) \equiv 1 \pmod{3}$ .

**Lemma 6.**

**Lemma 7.**

**Lemma 8.**

**Lemma 9.**

**Lemma 10.**

**Lemma 11.**

**Lemma 12.**

**Lemma 13.**

$$\Phi_1(x), \Phi_2(x), \Phi_3(x), \Phi_4(x), \Phi_6(x) \pmod{3}$$

**Lemma 14.**  $m_M(x) \equiv 1 \pmod{3}$ .

**Lemma 15.**  $M \equiv m_M(x) \pmod{3}$

$$\Phi_1(x), \Phi_2(x), \Phi_3(x), \Phi_4(x), \Phi_6(x), \Phi_1(x)\Phi_2(x) \pmod{3}$$

**Lemma 16.**

**Theorem 17.**  $GL(2, \mathbb{Q})$  has order  $1, 2, 3, 4, 6 \pmod{3}$ .

**Definition 18.**

**Theorem 19.**  $n = 1, 2, 3, 4, 6 \pmod{3}$ ,  $n \equiv GL(2, \mathbb{Q}) \pmod{M} \pmod{3}$ .