ERRATA:
SYLVESTER’S PROBLEM AND MOCK HEEGNER POINTS

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This note gives some errata for the article Sylvester’s problem and mock Heegner points [1]. Thanks to Guido Bosco.

(1) Section 2.1, description of MAut: this should be a semi-direct product, so
\[ \text{MAut}(X_0(243)) = \langle w, v^{-1}wv \rangle \rtimes \langle v \rangle \simeq S_3 \times \mathbb{Z}/3\mathbb{Z}. \]

(2) Proof of Proposition 4.4.2, after (4.4.3), “modular automorphism”: the matrix \( A \) is not in MAut(\( X_0(243) \)), so it is not a modular automorphism by our definition; but it does define an automorphism of \( X(\Gamma) \), as explained in section 2.1.

(3) Proposition 4.4.2: the element \( \alpha_\sigma = 1 - 2\pi \omega^2 \) works for \( p \equiv 4 \pmod{9} \); for \( p \equiv 7 \pmod{9} \), we take instead \( \alpha_\sigma = 1 - 2\pi \omega \), with the same conclusion.

(4) Proposition 4.4.2: should be
\[
(wv^{-1}wv)t^2v^2 = (wv^{-1}wv)t^2v^2 \\
\text{instead of } (wvwv)t^2v^2,
\]
giving the matrix \( A = \begin{pmatrix} 4473 & 25 \\ 12879 & 72 \end{pmatrix} \).

(5) (5.2.3): the term \( f(p(\omega - 7)/9) \) appears in the denominator, so we cannot directly apply Proposition 5.2.1. Instead, write
\[
f(p(\omega - 7)/9)x(Q) = e^{\pi i/6} \sqrt[3]{3}f(p(\omega - 7)/27)f(p\omega/9)
\]
and apply Proposition 5.2.1 to get
\[
f((\omega - 7)/9)x(Q)^p = (e^{\pi i/6} \sqrt[3]{3})^p f((\omega - 7)/27)f(\omega/9) \pmod{p\mathbb{Z}).
\]
Then use the evaluation \( f((\omega - 7)/9) = -\omega^2/\sqrt{9} \) in the proof of Lemma 5.2.4 to see that this value is invertible to obtain the equality.

REFERENCES


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