1 Remarks on 'Modular forms and modular curves'

p. 1, l. 9: Since a Riemann surface is connected by our definition, this should say *any connected open subset* instead of *any open subset.*

p. 3, l. 5: replace *open disk with centred at* by *open disk centred at.*

p. 3, l. -14: TEX: $'s around $2k$ missing.

p. 6, l. -18: replace *isomorphism* $j\colon Y(N) \to \mathbb{C}$ by *isomorphism* $j\colon Y(1) \to \mathbb{C}$

p. 7: I suggest to add the recent book by Diamond and Shurman (Springer GTM 228) to the references.

p. 16, l. 12: TEX: replace w_{ij} by ω_{ij}.

p. 16, l. -2: replace $L(D)$ by $L(K)$.

p. 17, Example 1.23: Here m should be ≥ 0 (actually $m = -1$ is still OK).

p.17, l. 9: replace *vector space of* $m+1$ by *vector space of dimension* $m+1$.

p. 17, Exercise 1.24: I think the hint points at a unnecessarily complicated (though maybe enlightening) method. Using Example 1.23 and the remark that $\ell(D) = \ell(D')$ for linearly equivalent divisors D, D', doesn't (1.20) follow immediately?

p. 19, Prop. 2.1 (d): TEX: replace H by $\mathbb{H}$.

p. 23, l. 3: TEX: replace Z by $\mathbb{Z}$ (twice).

p. 23, l. 6: replace $ab - cd - Nm = 1$ by $ad - cb - Nm = 1$.

p. 27, l. 2: replace $\Gamma' \cdot D = \mathbb{H}$ by $\Gamma' \cdot \overline{D} = \mathbb{H}$.

p. 27, l. 16: replace *exits* by *exists.*

p. 27, l. -9: replace cy^2 by $(cy)^2$.

p. 28, l. 4: replace $\Gamma \cdot \overline{D} = \mathbb{H}$ by $\Gamma' \cdot \overline{D} = \mathbb{H}$.

p. 29, Prop. 2.16: The $\gamma_i \in \Gamma$ have to be chosen such that $\overline{\Gamma} = \overline{\Gamma'}\overline{\gamma_1} \cup \cdots \cup \overline{\Gamma'}\overline{\gamma_m}$. Then in the first line of the proof one has $\gamma = \pm\gamma'\gamma_i$. In the second line, there is a typo: replace $z = \gamma'\gamma_i z$ by $z = \gamma'\gamma_i z'$. In the last line, one gets only $\gamma\gamma_i = \pm\gamma_j$, but this is indeed a contradiction with the γ_i chosen as above.

p. 29, Prop. 2.17: I suggest to include a reference to H. Verrill's fundamental domain drawer at http://www.math.lsu.edu/~verrill/

p. 30, Example 2.19: The elements of Δ should all fix 0. The description of $\mathrm{Aut}(D)$ refers to the group of automorphisms fixing the origin.

p. 31, Prop. 2.21: replace *is a compact* by *is compact.*

p. 31, around l. -7: I think a remark that/why $\Gamma\backslash\mathbb{H}^*$ is Hausdorff should be added.

p. 33, Exercise 2.24: H should be a normal subgroup of G.

p. 34, l. 4; p. 65, l. 13: Update: the Taniyama conjecture has been proved for all rational elliptic curves.

p. 43, first line of Remark 4.4: replace *on Section 3* by *in Section 3*.

p. 43, Definition 4.5 (a): Add *and for all* $\gamma = \begin{pmatrix} i & a & b \\ & c & d \end{pmatrix} \in \Gamma$

p. 43, l. -9: replace *then implies* by *then (a) implies*.

p. 48, l. 3: replace $\mathrm{ord}_Q(f) = \mathrm{ord}_P(\omega) - k$ by $\mathrm{ord}_Q(f) = \mathrm{ord}_P(\omega) + k$.

p. 71, proof of Lemma 5.2: It is not true in general that αD is again a fundamental domain for $\Gamma(1)$, even for general $\alpha \in SL_2(\mathbb{R})$. One way to proceed would be to compute the Petersson scalar product with respect to a sufficiently small congruence subgroup Γ such that $\alpha\Gamma\alpha^{-1} \subseteq \Gamma(1)$ (and to normalize by the quotient of the volumes of the fundamental domains to get the wanted scalar product w. r. t. $\Gamma(1)$). If then D denotes a fundamental domain for Γ, αD is a fundamental domain for $\alpha\Gamma\alpha^{-1}$ and obviously has the same volume as D, and by the choice of Γ, f and g are still modular w. r. t. $\alpha\Gamma\alpha^{-1}$.

p. 75, l. 5: replace *far from being* by Γ *is far from being*.

p. 75, statement of Lemma 5.30: replace $\Gamma\alpha$ by $\Gamma\alpha\Gamma$ in the second displyed line.

p. 84, l. -13: The formula should begin with $F(j(y), Y) =_{df}$ instead of $f(j(z), Y) =_{df}$. The first congruence does hold modulo $\mathfrak{p}$, as stated, but the second one holds only modulo p.

p. 90, l. 12: replace *definately* by *definitely*.

p. 90, l. -22: replace *an complete nonsingular curve* by *a complete nonsingular curve*.

p. 90, l. -20: replace $\mathbb{C}(j(z), j(Nz)$ by $\mathbb{C}(j(z), j(Nz))$.

p. 92, Definition 8.1 (a): $t \in T(k)$ can be regarded as $\mathrm{Specm} k \to T$ (instead of $\mathrm{Specm} k \to V$). In the third line of (a), replace $T(k)$ by $\mathcal{F}(k)$.

p. 106, l. -8: replace *that* $Z(s)$ *can be* by *that* $\Lambda(s)$ *can be*