Comment on
"An Introduction to Invariants and Moduli"

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10/14/03(T)

1) page 31, line 15 $6x^2y^2$ and $6x^2(y^2 - x^2)$ both map to the point $(3, 1)$, $\cdots$

2) page 35, line 11 a (nonzero) homogeneous polynomial in three variables

3) page 37, line 22 **Proposition 1.37** Assume that $m \leq d + 1$. (A plane curve of degree d has no points of multiplicity $\geq d + 1$.)

4) page 357, line 12 **Lemma 10.19.** If E is simple, then

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5) page 5, line ↑7

$$\beta = -\frac{T}{\sqrt[3]{D}}$$

6) page 5–6 (i) Points in the (open) right-hand parabolic region $\beta^2 < 4\alpha$ do not correspond to any curves over the real numbers. The points in the parameter space are real, but the coefficients of the defining equations (1.1) always require imaginary complex numbers. For example, the point $(\alpha, \beta) = (1, 0)$ corresponds to the curve

$$\sqrt{-1}(x^2 - y^2) + 1 = 0.$$

7) page 6, Insert the following between line 13 and Figure 1.2.

(vi) Points in the non-negative β-axis $\alpha = 0, \beta \leq 0$ do not corresponds to any curves over the real numbers. The origin $(0, 0)$ corresponds to the curve

$$\sqrt{-1}(x^2 - y^2) + 2xy = 2x.$$

(vii) Points in the region $\beta^2 > 4\alpha > 0, \beta < 0$ correspond to ellipses of imaginary radii:

$$\frac{x^2}{a^2} + \frac{y^2}{b^2} + 1 = 0.$$

These are curves over the real numbers but have no real points.

8) page 8, line ↑8 (RHS) should read

$$2 - \frac{T^2}{E}.$$

Comment: Let λ and μ be the eigenvalues of the quadratic part of (1.1). Then (RHS) is equal to $-\frac{\lambda}{\mu} - \frac{\mu}{\lambda}$. Hence the eccentricity e is equal to $\sqrt{1 - \frac{\mu}{\lambda}}$ or $\sqrt{1 - \frac{\lambda}{\mu}}$.

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9) page 237, line 9 projective space $\mathbb{P}^{n-1}$

10) page 240, line ↑9 for which $i_a \leq j_1$.

11) page 269, line 5 $\cdots = (2)$

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12) page 282, line ↑8 $\{\cdots\}$/isomorphism should read $\{\cdots\}/\sim$.

13) page 284, line 8 $R^{\oplus r}$