ERRATUM TO "RELATIVE INTEGRAL BASES"

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In the first theorem, the assumption $D \nmid a$ should be replaced by $D \nmid 4a$. The proof for case (i) at the top of p. 94 should be changed to the following: $z = x + \frac{1}{2} y \sqrt{-D}$ with $x, y \in \mathbb{Z}$. Taking norms and then square roots we obtain $g = x^2 + \frac{1}{4} Dy^2$. Therefore $4g > D$. Since $g$ divides $D$, we have $D = g, 2g, 3g, \text{ or } 4g$. Since $4|D$ and $g$ is odd (because $g|a$), $D \neq g, 2g, \text{ or } 3g$. If $D = 4g$ then $D|4a$, contrary to assumption. Therefore $z$ does not exist. The remainder of the proof remains unchanged.

The example $a = 5, D = 20$ shows that the corrected assumption is needed, since $1, \frac{1}{2}i(1 + \sqrt{5})$ is an integral basis for $\mathbb{Q}(\sqrt{-20}, \sqrt{5})$ over $\mathbb{Q}(\sqrt{-20})$.

The author wishes to thank K. Pammer and H. Pfeuffer for pointing out the error and supplying the counterexample. Also, it should be mentioned that more general results may be found in [1].

REFERENCES


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