The Totally Real A_6 Extension of Degree 6 with Minimum Discriminant

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Abstract

The totally real algebraic number field F of degree 6 with Galois group A_6 and minimum discriminant is determined. It is unique up to isomorphy, and is generated by a root of the polynomial $t^6 - 24t^4 + 21t^2 + 9t + 1$ over the rationals. We also give an integral basis and list the fundamental units and class number of F.