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divisor theory in finite extension

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Theorem. Let the integral domain \mathcal{O} , with the quotient field k , have the divisor theory $\mathcal{O}^* \rightarrow \mathfrak{D}$, determined (see divisors and exponents) by the <http://planetmath.org/ExponentValuation2exponent> system N_0 of k . If K/k is a finite extension, then the exponent system N , consisting of the <http://planetmath.org/ContinuationOfExponent> continuations of all exponents in N_0 to the field K , determines the divisor theory of the integral closure of \mathcal{O} in K .

Corollary. In the ring of integers \mathcal{O} of any algebraic number field $\mathbb{Q}(\vartheta)$, there is a divisor theory $\mathcal{O}^* \rightarrow \mathfrak{D}$, determined by the set of all exponent valuations of $\mathbb{Q}(\vartheta)$.

References

- [1] S. BOREWICZ & I. SAFAREVIC: *Zahlentheorie*. Birkhäuser Verlag, Basel und Stuttgart (1966).