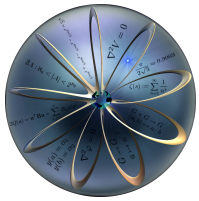

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central simple algebra

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Let K be a field. A *central simple algebra* A (over K) is an algebra A over K, which is finite dimensional as a vector space over K, such that

- A has an identity element, as a ring
- A is central: the center of A equals K (for all $z \in A$, we have $z \cdot a = a \cdot z$ for all $a \in A$ if and only if $z \in K$)
- A is simple: for any two sided ideal I of A, either $I = \{0\}$ or $I = A$

By a theorem of Brauer, for every central simple algebra A over K, there exists a unique (up to isomorphism) division ring D containing K and a unique natural number n such that A is isomorphic to the ring of $n \times n$ matrices with coefficients in D.