Definitions

Definition 0.1. The **Regular Representation** of A is given by $\rho : A \to End(A)$, with $\rho(a)b = ab$.

Definition 0.2. A representation is called **irreducible** or **simple**, if the only subrepresentations are 0 and V.

Definition 0.3. A non-zero representation of A is said to be **indecomposable** if it cannot be written as a direct sum of two non-zero representations.

Lemma 0.1. Let V_1 and V_2 be representations of an algebra A over a field F. Let $\phi : V_1 \to V_2$ be a non-zero morphism. Then

1. If V_1 is irreducible, ϕ is injective.
2. If V_2 is irreducible, ϕ is surjective.

Definition 0.4.