

Definition (Semigroup homomorphism). Let \mathbf{S} and \mathbf{T} be semigroups. A homomorphism of semigroups from \mathbf{S} to \mathbf{T} is a function $F : \mathbf{S} \rightarrow \mathbf{T}$ such that for all $x, y \in \mathbf{S}$,

$$F(x \circ_{\mathbf{S}} y) = F(x) \circ_{\mathbf{T}} F(y)$$