

Definition (Semigroup contravariant action (preliminary version)). A *semigroup contravariant action* of a semigroup \mathbf{S} on a set \mathbf{A} is a map

$$\text{Contravact} : \mathbf{A} \times \mathbf{S} \rightarrow \mathbf{A}$$

such that, for all $a \in \mathbf{A}$,

$$\text{Contravact}(\text{Contravact}(a, y), x) = \text{Contravact}(a, x \circ_{\mathbf{S}} y).$$