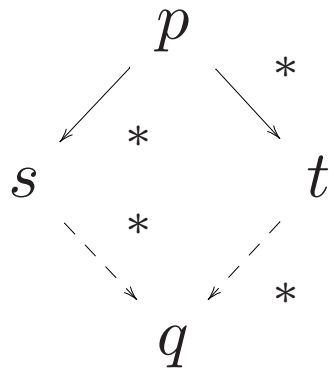


\rightarrow is *confluent* iff



TRS \mathcal{R} is *convergent* iff \mathcal{R} terminates and is confluent

Algorithm WORD_PROBLEM(\mathcal{R}, s, t)

Input: convergent TRS \mathcal{R} (equivalent to \mathcal{E}) and $s, t \in \mathcal{T}(\Sigma, \mathcal{V})$.

Output: “*True*” if $s \equiv_{\mathcal{E}} t$, and “*False*” otherwise.

1. Reduce s and t in an arbitrary way with $\rightarrow_{\mathcal{R}}$ as long as possible.
In this way, one obtains the normal forms $s \downarrow_{\mathcal{R}}$ and $t \downarrow_{\mathcal{R}}$.
2. If $s \downarrow_{\mathcal{R}} = t \downarrow_{\mathcal{R}}$, then return “*True*” .
Otherwise, return “*False*” .