

UA 2 Practical 2

① Let $\mathcal{E} = \{ f(f(x)) \approx g(x) \}$

- Find a critical pair of \mathcal{E}

- Find a convergent system equivalent to \mathcal{E} .

What terms are in normal form wrt. your system?

② Prove that $\mathcal{E} = \{ x \cdot (y \cdot z) \approx (x \cdot y) \cdot z \}$

is convergent. (Hint: how do terminal vertices look like?)

③ Is $\mathcal{E} = \{ xy \cdot y(xx) \approx y(x \cdot (yx \cdot y)), xy \approx (y \cdot xy) \cdot (yx \cdot x) \}$

compatible with a reduction order?

④ Show how Knuth-Bendix algorithm enters an infinite loop for $\mathcal{E} = \{ x \cdot yz \approx xy \cdot z, xx \approx x \}$

(or at least run the alg. for a while)

⑤ Find a convergent system for the equational theory of groups.

(Hint: don't use Knuth-Bendix. Think of normal forms)