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Christoph Weidenbach

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**Tutorials for “Automated Reasoning II”  
Exercise sheet 1**

**Exercise 1.1:** ( *P* )

Prove by congruence closure that the following ground equations are unsatisfiable:  $f(a, g(a)) \approx f(b, g(b))$ ,  $g(a) \approx h(c)$ ,  $h(d) \approx g(b)$ ,  $d \approx c$ ,  $f(a, h(d)) \approx f(h(d), a)$ ,  $f(b, g(b)) \not\approx f(h(c), a)$ .

**Exercise 1.2:** ( *P* )

Show that the Knuth-Bendix Completion procedure can be turned into a decision procedure for ground (in)equations.