Problem Set 3
Recursion Theory

Institute for Logic, Language and Computation
Universiteit van Amsterdam

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[CT] is *Computability Theory* by Barry Cooper.

1. **Exercise 2.4.11, pg. 39** Write a Turing program for the function $g(x, y) = x \dot{-} y$.

2. Show that if $f : \mathbb{N} \to \mathbb{N}$ is TM-computable then there are infinitely many TM-programs that compute f.

3. Show that if $h : \mathbb{N} \times \mathbb{N} \to \mathbb{N}$ is TM-computable, then $f(n) = \mu z.[h(m, z) = 0]$ is also TM-computable.