Types and Programming Languages week5

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1 Pierce Exercises: 5.2.7, 5.3.6, 5.3.8

5.2.7 Write a function **equal** that tests two numbers for equality and returns a Church boolean. For example,

equal c_3 c_3

$\triangleright$ $(\lambda t.\ \lambda f.\ t)$

equal c_3 c_2

$\triangleright$ $(\lambda t.\ \lambda f.\ f)$

ok it would be something like if $a - a = 0$

equal iszero(subtract a a)

5.3.6 Adapt these rules to describe the other three strategies for evaluation - full beta-reduction, normal-order, and lazy evaluation.

5.3.8 Exercise 4.2.2 introduced a "big-step" style of evaluation for arithmetic expressions, where the basic evaluation relation is "term t evaluates to final result v." Show how to formulate the evaluation rules for lamda-terms in the big-step style.