Homework 1

Due: 25 January 2012

Problem 1.1

Write a BNF grammar for standard arithmetic notation, including the following operations:

$$+ \; - \; \times \; \div \; \sqrt{} \quad ^2$$

as well as allowing parentheses for grouping. As in conventional notation, the square root symbol operates on the number or expression to its right, and the "squared" operator (a superscript 2) operates on the number or expression to its left.

Problem 1.2

Demonstrate why operators at the same level of precedence must always share the same associativity as well, by giving an example of a grammar that puts two operators with differing associativity at the same precedence level and showing the problem this causes.