Homework 3

1. Assume you have an alphabet consisting of the letters a, b and c only. (a) Find a regular expression that recognises the two strings ab and ac. (b) Find a regular expression that matches all strings *except* these two strings. Note, you can only use regular expressions of the form

$$r ::= \varnothing \mid \epsilon \mid c \mid r_1 + r_2 \mid r_1 \cdot r_2 \mid r^*$$

2. Define the function $zeroable$ which takes a regular expression as argument and returns an integer. The function should satisfy the following property:

$$zeroable(r) \text{ if and only if } L(r) = \varnothing$$