

# Computer Mathematics

## Week 12 Examples

1. The following finite state machines can each generate more than one string of symbols. For each machine, write an expression describing all of the strings that it can produce. Use the regular expression operators: concatenation (implicit), alternation ('|'), and repetition ('\*').

	<i>finite state machine</i>	<i>regular expression</i>
a)		_____
b)		_____
c)		_____
d)		_____
e)		_____
f)		_____

On a separate sheet of paper, write the *transition table* for as many of the above state machines as you can.

2. Convert the following regular expressions into their equivalent finite state machines.

*regular  
expression*

*finite state  
machine*

a) abc

b) a+b+c

c) a\*b\*c

d) a?b?c

e) a|b|c

f) a+?b\*?c

g) a?+b?\*c

h) think|thack|thank|thick

i) ((a|bc)\*cd?)+e|f