Assignment 1

1 Truth Tables

For each of the below pairs of formulae, construct a truth table that shows if the two formulae are equivalent or not.

(a) $(x \to y) \to y$ and $x \to (y \to y)$

(b) $(x \wedge y) \to z$ and $x \to (y \to z)$

2 Validity

Model the following arguments symbolically and determine their validity.

(a) If an animal is a dog, it chases its tail. If an animal is a cat, it licks its tail. If an animal chases its tail, it will not lick its tail. Therefore, if an animal is a cat, it is a dog.

(b) If an animal is a pig, it likes slop. If an animal is a grad student, it likes free food. If an animal likes slop, it does not like gruel. If an animal likes free food, it likes swill. If an animal does not like gruel, it does not like swill. Therefore, if an animal is a grad student, it is not a pig.

3 Negation Normal Form

Put the following formulae into negation normal form.

(a) $(x \to y) \to z$

(b) $(x \wedge \neg y) \to (\neg y \to z)$

4 Sudoku (Extra Credit)

Solve the following Sudoku for extra credit and practice for an upcoming assignment.

		8		5		9		2
	7		2	3				4
			9	4	6	7		
2	8				3	6		
	5						2	
		1	6				8	5
		5	3	6	4			
1				9	7		5	
7		4		2		8		