

MATH 3345 HOMEWORK 1

**Problem 1.**

- (a) Section 2 Exercise 1 from Falkner.
- (b) Section 2 Exercise 2 from Falkner.

**Problem 2.** Section 2 Exercise 5 from Falkner.

**Problem 3.** Section 2 Exercise 9 from Falkner.

**Problem 4.** Section 2 Exercise 11 from Falkner.

**Problem 5.** Section 4 Exercise 1 from Falkner.

*Below are optional problems which need not be turned in. They will not be graded.*

**Optional problem 1.**

- (a) Show that if the truth values of  $P, Q$  are 1, 0 instead of  $T, F$  respectively, then the logical connectives and, or, and not are given by the functions  $(P, Q) \mapsto PQ$ ,  $(P, Q) \mapsto \max(P, Q)$ , and  $P \mapsto 1 - P$ .  
*Hint: Compare the truth tables for and, or, and not to the values of these functions on the possible values for  $P$  and  $Q$ .*
- (b) Find a function for  $\Rightarrow$ .

**Optional problem 2.** Section 2 Exercise 12 from Falkner.