Homework 4

Due Friday, March 9 by 4pm.

1. (Your lucky day! Give away problem) Define "the argument with premises $A_1, \ldots, A_n$ and conclusion B is valid" in terms of truth-tables.

2. True or False (explain your answer): If an argument is valid, then it might be made invalid by adding some further premises.

3. True or False (explain your answer): There could be a correctly written proof with the following line fragments:

$$\begin{array}{lll} 1 & (1)\ P & \text{A} \\ 2 & (2)\ Q \to \neg P & \text{A} \\ \vdots & & \\ 1 & (n)\ P \to \neg Q & \end{array}$$

   (Here "n" is an arbitrarily large number.)

4. Write a sentence ϕ that contains only $\wedge, \neg, P, Q$ and that has the following truth table.

P	Q	ϕ
T	T	F
T	F	T
F	T	T
F	F	F

5. True or False (explain your answer): The sentence

$$P \to (Q \to (R \to S))$$

   has a substitution instance that is an inconsistency.