Acknowledgments: *List the names of anyone with whom you discussed these problems **at all**. Leaving any name off the list constitutes academic dishonesty.*

Example A. Let P and Q be statements. Construct a truth table for the statement

$$[P \wedge (P \wedge (P \wedge Q) \wedge Q)] \vee Q.$$

Solution.

P	Q	$P \wedge Q$	$P \wedge (P \wedge Q)$	$P \wedge (P \wedge Q) \wedge Q$	$P \wedge (P \wedge (P \wedge Q) \wedge Q)$	$[P \wedge (P \wedge (P \wedge Q) \wedge Q)] \vee Q$
?	?	?	?	?	?	?
?	?	?	?	?	?	?
?	?	?	?	?	?	?
?	?	?	?	?	?	?

Example B. Let S and T be statements. Formulate a statement logically equivalent to $S \wedge (T \vee \neg S)$ using only S, T, $\neg$, and $\vee$ (each of which you can use as many times as you want/need). Explain how you arrived at your equivalent statement (possibly referring to results from Section 1.2), and then use a truth table to prove that your statement is logically equivalent. (Feel free to copy/modify the LaTeX code from Example A.)

Solution. *Your solution goes here.*

Example C. Let A and B be statements. Determine whether $(A \vee (\neg A \wedge B))$ and $\neg[\neg A \wedge (A \vee \neg B)]$ are logically equivalent. Justify your answer with a truth table that includes at least eight relevant columns.

Solution. *Your solution goes here.*