1: Which of these are propositions? What are the truth values of those that are propositions? (6 pts in total)

(a) Do not pass Go.

(b) What day is it?

(c) There are no flies in Michigan.

(d) $3 + z = 5$.

(e) The moon is made of blue cheese.

(f) $10^m \geq 100$.

2: What is the negation of each of these propositions? (4 pts in total)

(a) Jennifer and Teja are friends.

(b) There are 13 items in a baker's dozen.

(c) Abby sent more than 300 text messages every day.

(d) 125 is a perfect square.

3: Let p and q be the propositions "I bought a lottery ticket this week" and "I won the $55 million jackpot," respectively. Express each of these propositions as an English sentence. (7 pts in total)

(a) $\neg q$

(b) $p \vee q$

(c) $p \rightarrow q$

(d) $p \wedge q$

(e) $\neg p \rightarrow \neg q$

(f) $\neg p \wedge \neg q$

(g) $\neg p \vee (p \wedge q)$

4: Let p, q, and s be the propositions
p :You get an A on the final exam.
q :You do every exercise in the book.
s :You get an A in this class.
Write these propositions using p, q, and s and logical connectives (including negations). (5 pts in total)

(a) You get an A in this class, but you do not do every exercise in the book.

(b) You get an A on the final, you do every exercise in the book, and you get an A in this class.

(c) To get an A in this class, it is necessary for you to get an A on the final.

(d) You get an A on the final, but you don't do every exercise in this book; nevertheless, you get an A in this class.

(e) Getting an A on the final and doing every exercise in the book is sufficient for getting an A in this class.