1: Which of these are propositions? What are the truth values of those that are propositions?

(a) Do not pass go.

(b) What day is it?

(c) There are no flies in Maine.

(d) $4 + y = 5$.

(e) The moon is made of green cheese.

(f) $2^m \geq 100$.

2: What is the negation of each of these propositions?

(a) Jennifer and Teja are friends.

(b) There are 12 items in a baker's dozen.

(c) Abby sent more than 200 text messages every day.

(d) 144 is a perfect square.

3: Let p and q be the propositions "I bought a lottery ticket this week" and "I won the $10 million jackpot," respectively. Express each of these propositions as an English sentence.

(a) $\neg p$

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

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

(b) You get an A on the final, you do every exercise in this 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 everey exercise in this book is sufficient for getting an A in this class.