1. **[8 points]**

   (a) Let p and q be propositions. Show that $\sim (p \to q)$ is equivalent to (i.e. has the same truth table) as $p \wedge (\sim q)$.

   (b) Suppose p is the statement "8 is an even integer" and q is the statement "8 is divisible by six." Explain (in words) why the statement $\sim (p \to q)$ has the same meaning as $p \wedge (\sim q)$, in this context.

2. **[12 points]** Use a truth table to determine whether the following statement is a tautology.

   $$[(p \to q) \to r] \leftrightarrow [p \to (q \to r)]$$