CSE311: Quiz Section, 10/06/2011

1. Show that $(p \to q) \to r$ and $p \to (q \to r)$ are not logically equivalent.
2. Find the sum-of-products expansion of the Boolean function $F(w, x, y, z)$ that has the value 1 if and only if an odd number of w, x, y, and z have value 1.
3. Construct circuits from inverters, AND gates, and OR gates to produce these outputs.
   (a) $\overline{x} + y$
   (b) $xyz + \overline{x}y$
   (c) $(\overline{x + y})(\overline{y + z})(\overline{x + z})$
4. Design a circuit that implements majority voting for five individuals.
5. How many different Boolean functions $F(x, y, z)$ are there such that $F(\overline{x}, \overline{y}, \overline{z}) = F(x, y, z)$ for all values of the Boolean variables x, y, and z?