1. Perform the following subtraction using the 2’s compliment after converting the decimal numbers to binary numbers. (10 pt)

\[ 36 - 63.6875 \]

2. Reduce the following Boolean expression to the indicated number of literals. (10 pt each)
   a) \((x'y' + z') + z + xy + wz\) to three literals
   b) \(A'C' + ABC + A'C'\) to three literals

3. Simplify the following functions in sum of products, and especially for a) obtain all possible combinations of simple expressions. (15 pt each)
   a) \(F(w,x,y,z) = \sum\{0,2,4,5,6,7,8,10,13,15\}\)
   b) \(F(A,B,C,D,E) = \sum\{0,2,4,6,9,13,21,23,25,29,31\}\)

4. Simplify the following Boolean Function F, together with the don’t care conditions d, and then express the simplified function in product of maxterms. (15 pt each)
   a) \(F(A,B,C,D) = \sum\{0,6,8,13,14\}\)
      \(d(A,B,C,D) = \sum\{2,4,10\}\)
      \(F(A,B,C,D) = \Pi\{1,3,5,7,9,15\}\)
      \(d(A,B,C,D) = \sum\{4,6,12,13\}\)
   b) \(F(A,B,C,D) = \sum\{0,6,8,13,14\}\)
      \(d(A,B,C,D) = \sum\{2,4,10\}\)

5. Simplify the following Boolean Function F. (10 pt each)

\[ F = xy'z' + x'yz' + xyz + x'y'z \]