CE 6305, Homework 4

1. A residue arithmetic system is to be designed to represent integers in the range -2^{47} to $2^{47} - 1$.

   (a) Develop an efficient set of unrestricted residues for this system. Show your working.

   (b) Develop an efficient set of low-cost residues for this system. Show your working.

   (c) Estimate the delays in the system of part (b) for addition using adders and using ROMs (use the equations given in the notes for these estimates). Show your working.

2. Convert the numbers 247 and -118 to the system RNS(16,15,7) assuming the normal way of representing negative values. Show your working.

3. Negate the number (8,7,6) in RNS(16,15,7) Show your working.

4. Convert (12,7,4) and (1,13,6) in RNS(16,15,7) to decimal by going via the mixed radix system. Show your working.