

# ECS 154A Homework 2

Hardy Jones  
999397426  
Professor Nitta  
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- Find four four-variable Karnaugh maps with cheaper PoS than SoP.

		WX			
		00	01	11	10
YZ	00	0	1	1	0
	01	0	1	1	0
	11	1	1	1	1
	10	1	1	1	1

		WX			
		00	01	11	10
YZ	00	1	1	1	1
	01	0	0	0	0
	11	1	1	1	0
	10	1	1	1	1

		WX			
		00	01	11	10
YZ	00	1	0	1	1
	01	1	0	1	1
	11	1	1	1	1
	10	1	1	1	1

		WX			
		00	01	11	10
YZ	00	1	0	0	1
	01	1	1	0	0
	11	1	0	0	0
	10	1	0	0	1

- Can 1,500,000,000 be represented exactly in single-point floating precision? What is the next number that can be represented?

Yes, 1,500,000,000 can be represented exactly in single-point floating precision. The next highest number that can be accurately represented is 1,500,000,128

3. Convert each to signed magnitude, one's complement and two's complement.

- (a) 010100100111  
 Signed mag: 1319  
 Ones' comp: 101011011000  
 Twos' comp: 101011011001
- (b) 101101101011  
 Signed mag: -2875  
 Ones' comp: 010010010100  
 Twos' comp: 010010010101
- (c) 010010010111  
 Signed mag: 1175  
 Ones' comp: 101101101000  
 Twos' comp: 101101101001
- (d) 101010010000  
 Signed mag: -656  
 Ones' comp: 010101101111  
 Twos' comp: 010101110000

4. Implement the truth table with 2-1 and 4-1 mux's.

