Homework #2

1) 0111 0111 1111 1111

0 1110 1111111111

14-7=7

$1.1111111111 \times 2^{10}$

$11111111.1111 \times 2^{7}$

$2^7+2^6+2^5+2^4+2^3+2^2+2^1+2^0+2^{-1}+2^{-2}+2^{-3}$

$128+64+32+16+8+4+2+1+1/2+1/4+1/8$

$=255.875$

2) exponent = biased_exponent - bias

biased_exponent = exponent + bias

1-7 = -6

1.0×2^{-6}

$= (.000001)$
1 2 3 4 5 6

$2^{-6} = .015625$

3) $\overline{x+y} = \bar{x}\bar{y}$ $\quad f = \overline{x+y}$ $\quad g = \bar{x}\bar{y}$

x	y	$\bar{x}$	$\bar{y}$	$x+y$	$\overline{x+y}$	$\bar{x}\bar{y}$	
0	0	1	1	0	1	1	
1	0	0	1	1	0	0	
0	1	1	0	1	0	0	yes
1	1	0	0	1	0	0	
					f	g	

4) $f = x\bar{y} + yz$ then convert to NAND gates