HW #2 CSc 137, Harvey Total (16 pts)

1.6 What is the biggest positive FP number (in Decimal) that can be represented in 16-bit format using 1-bit sign, 4-bit biased exponent, and 11-bit fraction, where bias offset is 7? (4 pts)

$$\frac{1}{3 + 29 + 2} = \frac{1111111.1111}{1111} = \frac{1}{2^{7} + 2^{6} + 2^{5} + 2^{4} + 2^{3} + 2^{2} + 2^{4} + 2^{5} + 2^{4} + 2^{5} + 2^{4} + 2^{5} + 2^{4} + 2^{5$$

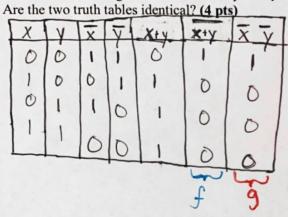
1.8 Do the following assuming 16-bit FP numbers with 4-bit bias exponent, bias offset = 7, and 11bit fraction: (4 pts)

a) What real number does an FP number with sign= 0, bias exponent =1 and fraction = 0 represent? (Answer in 4 decimal places)

exponent = biased_exponent - bias
biased_exponent = exponent + bias

$$3p$$
 exponent = $1-7$
= -6
• fraction = 0
• contine
 1.0×2^{-6}
= (0.000001)
= 2^{-6}
= 0.015625
= 0.0156

2.4 Proof Demorgan's Theorem $\overline{x+y} = \overline{x} \, \overline{y}$ by creating truth tables for $f = \overline{x+y}$ and $g = \overline{x} \, \overline{y}$.



2.5 (4 pts) Draw the circuit schematic for $f = x\bar{y} + yz$ and then convert the schematic to NAND gates using the steps illustrated in the textbook.

