数字逻辑 作业1

1.

1) 设 $X_1 = +0.10110110$　$[X_1]_{原} = 0.10110110$　$[X_1]_{反} = 0.10110110$　$[X_1]_{补} = 0.10110110$

2) 设 $X_2 = -0.10000010$　$[X_2]_{原} = 1.10000010$　$[X_2]_{反} = 1.01111101$　$[X_2]_{补} = 1.01111110$

2.

1) 设 $X_1 = +0.11010011$，$X_2 = -0.00110101$

原码：$[X_1]_{原} = 0.11010011$，$[X_2]_{原} = 1.00110101$，求 $[X_1+X_2]_{原}$

绝对值相减，有

$$\begin{array}{r} 0.11010011 \\ -0.00110101 \\ \hline 0.10011110 \end{array}$$

结果取 X_1 的符号，即 $[X_1+X_2]_{原} = 0.10011110$　真值为 $X_1+X_2 = +0.10011110$

补码：$[X_1]_{补} = 0.11010011$　$[X_2]_{补} = 1.11001011$

$[X_1+X_2]_{补} = [X_1]_{补} + [X_2]_{补} = 0.11010011 + 1.11001011 = 10.10011110 = 0.10011110$

真值为 $X_1+X_2 = +0.10011110$

反码：$[X_1]_{反} = 0.11010011$　$[X_2]_{反} = 1.11001010$

$[X_1+X_2]_{反} = [X_1]_{反} + [X_2]_{反} = 0.11010011 + 1.11001010 = 10.10011101 = 0.10011110$

真值为 $X_1+X_2 = +0.10011110$

2) 设 $N_1 = +0.10000001$　$N_2 = +0.00101111$

原码：$[N_1]_{原} = 0.10000001$，$[N_2]_{原} = 0.00101111$　真值为 $+0.10110000$

$[N_1+N_2]_{原} = [N_1]_{原} + [N_2]_{原} = 0.10000001 + 0.00101111 = 0.10110000$

补码：$[N_1]_{补} = 0.10000001$　$[N_2]_{补} = 0.00101111$　真值为 $+0.10110000$

$[N_1+N_2]_{补} = [N_1]_{补} + [N_2]_{补} = 0.10000001 + 0.00101111 = 0.10110000$

反码：$[N_1]_{反} = 0.10000001$　$[N_2]_{反} = 0.00101111$

$[N_1+N_2]_{反} = [N_1]_{反} + [N_2]_{反} = 0.10000001 + 0.00101111 = 0.10110000$

真值为 $N_1+N_2 = 0.10110000$