Asn 1/2 #'s 1-19

Brandon Anderson

Chap. 1

1) 827_{10}

$8 \times 10^2 + 2 \times 10^1 + 7 \times 10^0$

2) 223_{10} 2^7 2^6 2^4 2^3

$223 - 128 = 95$ $95 - 64 = 31$ $31 - 16 = 15$ $15 - 8 = 7$

2^2 2^1 2^0

$7 - 4 = 3$ $3 - 2 = 1$

$1 \cdot 2^7 + 1 \cdot 2^6 + 0 \cdot 2^5 + 1 \cdot 2^4 + 1 \cdot 2^3 + 1 \cdot 2^2 + 1 \cdot 2^1 + 1 \cdot 2^0$

3) 8 bits 4) 1101 1111

5) 1110 1101

$2^7 + 2^6 + 2^5 + 2^3 + 2^2 + 2^0$

$128 + 64 + 32 + 8 + 4 + 1$

237_{10}

6) 1110 1101

0001 0010

0001 0011

1 3

FB

7) 1019_{10}

$1019 / 256 = 3.98\ldots$

$3 \cdot 256 = 768$ $1019 - 768 = 251$

$251 / 16 = 15.68$

$15 \cdot 16 = 240$ $251 - 240 = 11$

3 is 11

0x3FB

8AE?

8) -2222

$2^{11} = 2048$ $2222 - 2048 = 174$

$2^7 = 128$ $174 - 128 = 46$

$2^5 = 32$ $46 - 32 = 14$

$2^3 = 8$ $14 - 8 = 6$

$2^2 = 4$ $6 - 4 = 2$

$2^1 = 2$

1000 1010 1110

0111 0101 0010

0x752

9) FAB

$15 \cdot 16^2 + 10 \cdot 16^1 + 11$

$3840 + 160 + 11$

4011

10) 1111 1010 1011 O S S

0000 0101 0100

0000 0101 0101 $0 \cdot 16^2 + 5 \cdot 16^1 + 5 \cdot 16^0$

-85

11) 1100 1010 1111 1110

12) 1011 1010 1011 1110

B A B E

13) A, B → $A \wedge B$ → $\neg(A \wedge B)$

14) A, B → $A \vee B$ → $\neg(A \vee B)$

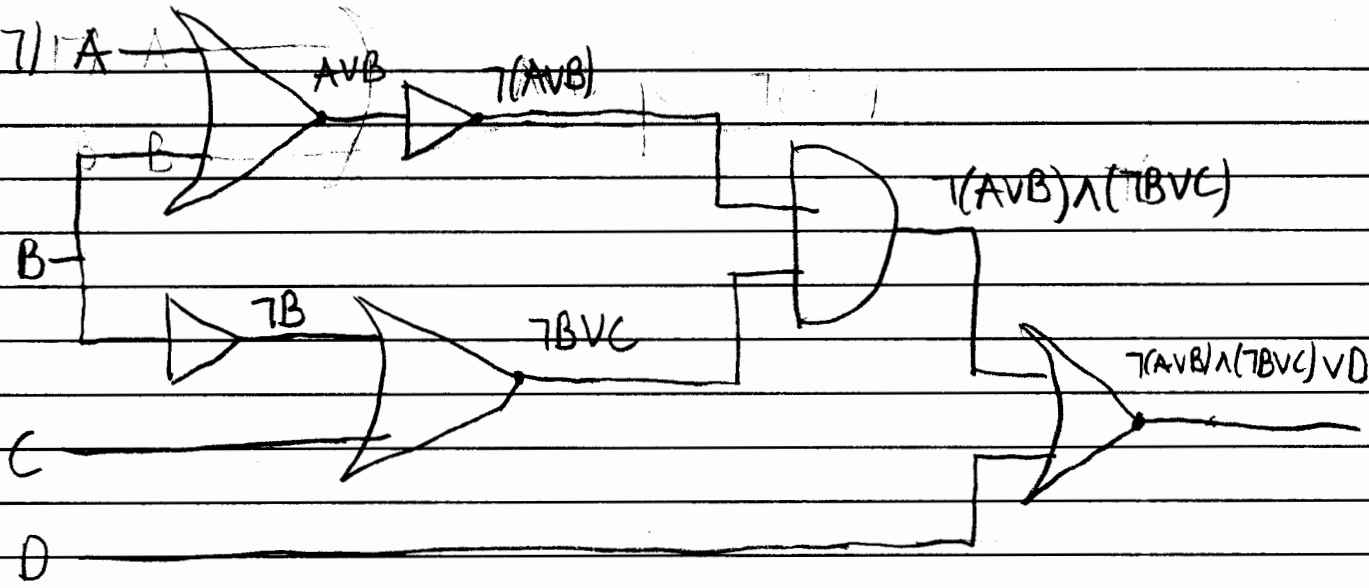
15) A → $\neg A$; $\neg A$, B → $\neg A \wedge B$

A, B → $\neg B$; A, $\neg B$ → $A \wedge \neg B$

$\neg A \wedge B$, $A \wedge \neg B$ → $(\neg A \wedge B) \vee (A \wedge \neg B)$

16) $A \wedge B$

$B \wedge C$ → $(A \wedge B) \vee (B \wedge C)$



18)

A	B	C	D	AVB	¬(AVB)	¬B	¬BVC	¬(AVB)∧(¬BVC)	¬(AVB)∧(¬BVC)∨D
0	0	0	0	0	1	1	1	1	1
0	0	0	1	0	1	1	1	1	1
0	0	1	0	0	1	1	1	1	1
0	0	1	1	0	1	1	1	1	1
0	1	0	0	1	0	0	0	0	0
0	1	0	1	1	0	0	0	0	1
0	1	1	0	1	0	0	1	0	0
0	1	1	1	1	0	0	1	0	1
1	0	0	0	1	0	1	1	0	0
1	0	0	1	1	0	1	1	0	1
1	0	1	0	1	0	1	1	0	0
1	0	1	1	1	0	1	1	0	1
1	1	0	0	1	0	0	0	0	0
1	1	0	1	1	0	0	0	0	1
1	1	1	1	1	0	0	1	0	1

$(\neg A \wedge \neg B \wedge \neg C \wedge \neg D) \vee (\neg A \wedge \neg B \wedge \neg C \wedge D) \vee (\neg A \wedge \neg B \wedge C \wedge \neg D) \vee (\neg A \wedge \neg B \wedge C \wedge D) \vee (\neg A \wedge B \wedge \neg C \wedge D) \vee (\neg A \wedge B \wedge C \wedge D) \vee (A \wedge \neg B \wedge \neg C \wedge D) \vee (A \wedge \neg B \wedge C \wedge D) \vee (A \wedge B \wedge \neg C \wedge D) \vee (A \wedge B \wedge C \wedge D)$

19) $\neg(A \vee B) \wedge (\neg B \vee C) \vee D$

$(\neg A \wedge \neg B) \wedge (\neg B \vee C) \vee D$