

Asn 2 #5-12
#1-12

Brandon Andersen

$$5) 1110 \quad 1101$$

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

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

$$\boxed{237_{10}}$$

$$6) 1110 \quad 1101$$

$$0001 \quad 0010$$

$$0001 \quad 0011$$

$$2^4 + 2^1 + 2^0$$

$$16 + 2 + 1$$

$$\boxed{-19}$$

$$7) 1019_{10}$$

$$1019 / 256 = 3 \quad 3 \cdot 256 = 768$$

$$1019 - 768 = 251 \quad 251 / 16 = 15$$

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

$$3 \quad 15 \quad 11$$

$$\boxed{0x3FB}$$

$$8) -2222$$

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

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

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

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

$$2^2 = 4 \quad 6 - 4 = 2$$

$$1000 \quad 1010 \quad 1110$$

$$0111 \quad 0101 \quad 0001$$

$$0111 \quad 0101 \quad 0010$$

$$7 \quad 5 \quad 2$$

$$\boxed{0x752}$$

$$9) FAB$$

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

$$\boxed{4011}$$

$$10) 1111 \quad 1010 \quad 1011$$

$$0000 \quad 0101 \quad 0100$$

$$0000 \quad 0101 \quad 0101$$

$$0 \quad 5 \quad 5$$

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

$$\boxed{-85}$$

$$11) 1100 \quad 1010 \quad 1110$$

$$12) 1011 \quad 1010 \quad 1011 \quad 1110$$

$$0100 \quad 0101 \quad 0100 \quad 0001$$

$$0100 \quad 0101 \quad 0100 \quad 0010$$

$$4 \quad 5 \quad 4 \quad 2$$

$$\boxed{0x4542}$$

$$1) 7(0V1) \wedge (71V1) V0$$

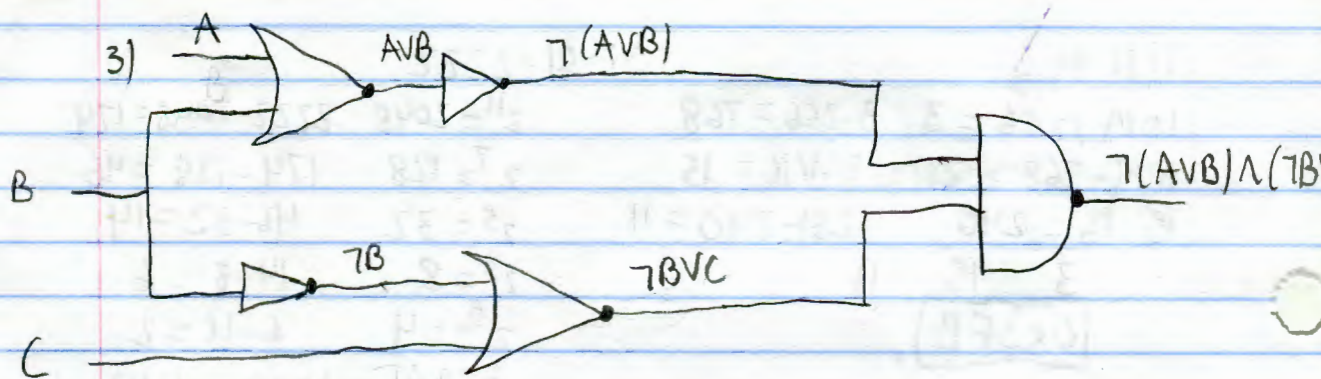
$$70 \quad \wedge \quad 1 \quad V0$$

$$0V0$$



2)

A	B	C	logic function
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	1



4)

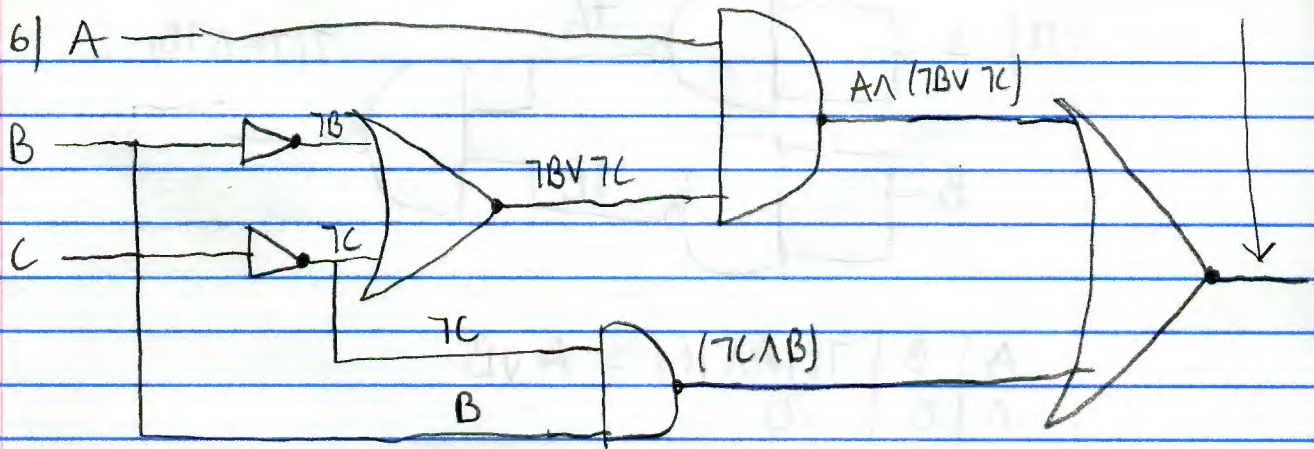
A	B	C	$\neg(A \vee B)$	$\neg(B \vee C)$	$\neg(A \vee B) \wedge \neg(B \vee C)$
0	0	0	1	1	1
0	0	1	1	1	1
0	1	0	0	0	0
0	1	1	0	1	0
1	0	0	0	1	0
1	0	1	0	1	0
1	1	0	0	0	0
1	1	1	0	1	0

5) a) $A \cdot ((\neg B) \vee (\neg C)) \vee (\neg C \cdot B)$

b) $A \cdot ((\neg B) + (\neg C)) + (\neg C \cdot B)$

c) $A \cdot (\overline{B} + \overline{C}) + \overline{C} \cdot B$

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



7)

A	B	C	$(\neg B \vee \neg C)$	$A \wedge (\neg B \vee \neg C)$	$\neg C \wedge B$	$A \wedge (\neg B \vee \neg C) \vee (\neg C \wedge B)$
0	0	0	1	0	0	0
0	0	1	1	0	0	0
0	1	0	1	0	1	1
0	1	1	0	0	0	0
1	0	0	1	1	0	1
1	0	1	1	1	0	1
1	1	0	1	1	1	1
1	1	1	0	0	0	0

8) $(\neg A \wedge B \wedge \neg C) \vee (A \wedge \neg B \wedge \neg C) \vee (A \wedge \neg B \wedge C) \vee (A \wedge B \wedge \neg C)$
 $\bar{A}\bar{B}\bar{C} + A\bar{B}\bar{C} + A\bar{B}C + A\bar{B}\bar{C}$

9) $ABC + \bar{A}\bar{B}\bar{C} + \bar{A}BC + A\bar{B}\bar{C} + \bar{A}B\bar{C} + A\bar{B}C + A\bar{B}\bar{C} + ABC$

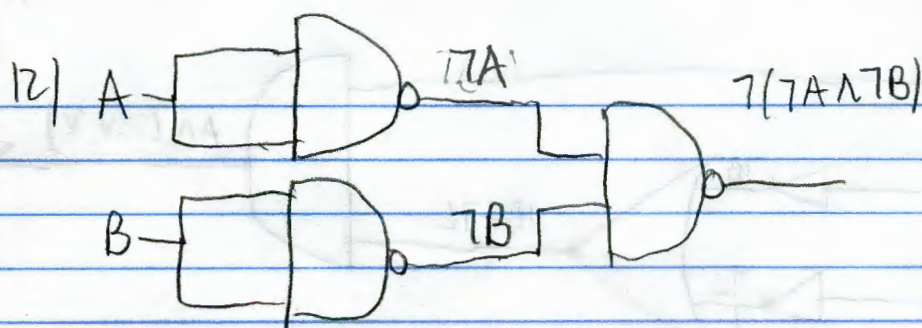
10) A logic circuit diagram for the identity $A \wedge A = A$. It consists of a single input A connected to both inputs of a 2-input AND gate. The output of the AND gate is labeled $A \wedge A$. To the right of the diagram is a truth table for the expression $A \wedge A$.

A	$A \wedge A$
0	0
1	1

$\neg(A \wedge A) = \neg A \vee \neg A = \neg A$

11) A logic circuit diagram for the identity $A \wedge B = A \wedge B$. It consists of two inputs A and B connected to the inputs of a 2-input AND gate. The output of the AND gate is labeled $A \wedge B$. To the right of the diagram is a truth table for the expression $A \wedge B$.

A	B	$A \wedge B$
0	0	0
0	1	0
1	0	0
1	1	1



A	B	$\neg(\neg A \wedge \neg B) = A \vee B$
0	0	0
0	1	1
1	0	1
1	1	1