

Homework Solution for work due on Wednesday 2/13/08 -- IN CLASS

1. $R = AB + CB$ If $A = 1, B = 0, C = 1$, then what is R ?
 $R = 0$

A	B	C	AB	CB	AB+CB
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	0	0	0
0	1	1	0	1	1
1	0	0	0	0	0
1	0	1	0	0	0
1	1	0	1	0	1
1	1	1	1	1	1

2. $R = (A+B) + (AB)$ If $A = 1, B = 0$, then what is R ?
 $R = 1$

A	B	A+B	AB	(A+B)+(AB)
0	0	0	0	0
0	1	1	0	1
1	0	1	0	1
1	1	1	1	1

3. $R = A(C + \sim B)$ If $A = 1, B = 0, C = 1$, then what is R ?
 $R = 1$

A	B	C	$\sim B$	$(C + \sim B)$	$A(C + \sim B)$
0	0	0	1	1	0
0	0	1	1	1	0
0	1	0	0	0	0
0	1	1	0	1	0
1	0	0	1	1	1
1	0	1	1	1	1
1	1	0	0	0	0
1	1	1	0	1	1

4. $R = (X+Y)(Z + \sim X)$ If $X = 0, Y = 0, Z = 1$, then what is R ?
 $R = 0$

X	Y	Z	$\sim X$	$(X+Y)$	$(Z + \sim X)$	$(X+Y)(Z + \sim X)$
0	0	0	1	0	1	0
0	0	1	1	0	1	0
0	1	0	1	1	1	1
0	1	1	1	1	1	1
1	0	0	0	1	0	0
1	0	1	0	1	1	1
1	1	0	0	1	0	0
1	1	1	0	1	1	1

Homework Solution for work due on Wednesday 2/13/08 -- IN CLASS

5. $R = \sim A + BC + C$ If $A = 1, B = 0, C = 1$?
 $R = 1$

NOTE: Order of operations REALLY matters here!

A	B	C	$\sim A$	BC	$\sim A + BC$	$\sim A + BC + C$
0	0	0	1	0	1	1
0	0	1	1	0	1	1
0	1	0	1	0	1	1
0	1	1	1	1	1	1
1	0	0	0	0	0	0
1	0	1	0	0	0	1
1	1	0	0	0	0	0
1	1	1	0	1	1	1

Extra Credit

$R = A \cdot \sim B(\sim(C+A)+D)$
 $R = 0$

If $A = 0, B = 0, C = 1, D = 1$, what is R ?

Hint the truth table in this example has 4 columns and 16 rows.

A	B	C	D	$\sim B$	$(C+A)$	$\sim(C+A)$	$\sim(C+A)+D$	$\sim B(\sim(C+A)+D)$	$A \cdot \sim B(\sim(C+A)+D)$
0	0	0	0	1	0	1	1	1	0
0	0	0	1	1	0	1	1	1	0
0	0	1	0	1	1	0	0	0	0
0	0	1	1	1	1	0	1	1	0
0	1	0	0	0	0	1	1	0	0
0	1	0	1	0	0	1	1	0	0
0	1	1	0	0	1	0	0	0	0
0	1	1	1	0	1	0	1	0	0
1	0	0	0	1	1	1	0	0	0
1	0	0	1	1	1	1	1	1	1
1	0	1	0	1	1	0	0	0	0
1	0	1	1	1	1	0	1	1	1
1	1	0	0	0	1	0	0	0	0
1	1	0	1	0	1	0	1	0	0
1	1	1	0	0	1	0	0	0	0
1	1	1	1	0	1	0	1	0	0