

# Introduction to Computer Science

## E15 – Discussion Sections – Week 38

1. Produce formulas and circuits for the following functions:

	w	x	y	z
	0	0	0	1
	0	0	1	1
	0	1	0	1
(a)	0	1	1	0
	1	0	0	1
	1	0	1	1
	1	1	0	1
	1	1	1	0

	a	b	c	d	z
	0	0	0	0	1
	0	0	0	1	0
	0	0	1	0	0
	0	0	1	1	0
	0	1	0	0	0
	0	1	0	1	1
	0	1	1	0	0
(b)	0	1	1	1	0
	1	0	0	0	1
	1	0	0	1	0
	1	0	1	0	1
	1	0	1	1	0
	1	1	0	0	0
	1	1	0	1	1
	1	1	1	0	1
	1	1	1	1	1

2. Produce a truth table and circuit for the following function (which is written as a Boolean formula):

$$((x \wedge y) \vee (\bar{x} \wedge \bar{y})) \vee z$$

3. From the textbook, pages 57–58: Problems 1c, 2c, 3b, 4c, 5.
4. From the textbook, page 68: Problems 1b, 1c, 2b, 2d (for these problems use the floating-point format discussed in class, which is the same as in the textbook except that it uses an implicit bit in the mantissa).
5. From the textbook, page 88: Problem 39 (again use the format discussed in class).
6. Choose two floating point numbers and add them together. If you cannot express the result in the same format, try two other numbers.