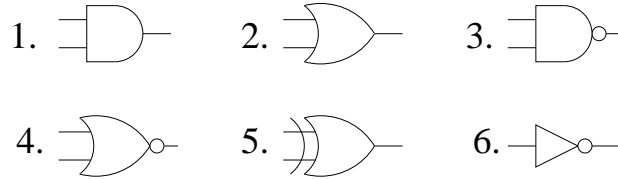


Lab 3 - Logic Gates

For problems (1) and (2), refer to the diagram below:



1. Fill in the blank. Give the names of the numbered logic gates in each of the matching numbered blanks.

1. _____ 2. _____ 3. _____

4. _____ 5. _____ 6. _____

2. Fill in the blank. Match the truth tables below to the numbered logic gates in the diagram above. Write an **X** if the truth table does not correspond to any logic gate in the diagram above.¹

A. _____

	F	T
F	F	F
T	F	T

B. _____

	F	T
F	F	T
T	T	F

C. _____

	F	T
F	T	F
T	F	T

D. _____

	F	T
F	T	F
T	F	F

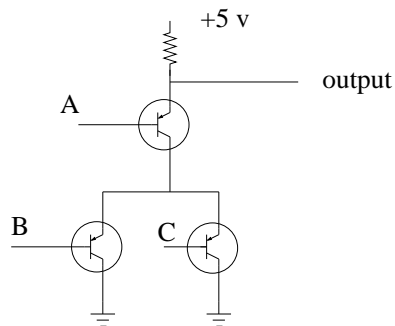
E. _____

	F	T
F	T	T
T	T	T

F. _____

	F	T
F	T	T
T	T	F

3. Consider the following transistor circuit with three inputs.

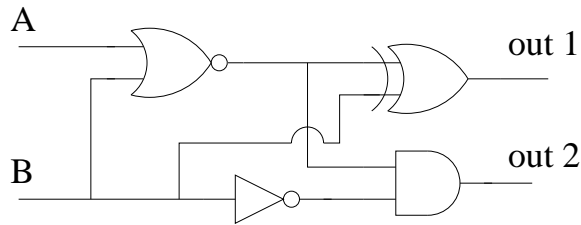


¹Logical **false** is indicated by “F”; logical **true** is indicated by “T”.

Fill in the (approximate) output voltage in the table below:

A	5v	5v	5v	5v	0v	0v	0v	0v
B	5v	5v	0v	0v	5v	5v	0v	0v
C	5v	0v	5v	0v	5v	0v	5v	0v
Output								

4. For this problem refer to the circuit diagram below. Give a truth table for each of the outputs **out 1** and **out 2**.



5. For this problem, review the circuit construction steps in chapter 4.4.2. Draw a 3-input circuit (using logic gates) which will give the output shown in the table.

A	B	C	Output
0	0	0	1
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	0
1	0	1	0
1	1	0	0
1	1	1	1

6. Using a circuit simulator. For this problem, point your web browser to <http://logic.ly/demo>. Using the tools on the web page, draw the following circuit using toggle switches for the inputs **A** and **B**. Print a copy of your screen to turn in with your lab. Using the circuit simulator, discover the truth table for the circuit below. What logical operation does this truth table indicate ?

