## CSCI 2330 – Integer Logic Exercises

Let  $\mathbf{ux}$  be an arbitrary unsigned int and let  $\mathbf{x}$  and  $\mathbf{y}$  be arbitrary signed ints (in 32 bits). Assume that all constants are signed. For each expression below, decide whether the expression is **true** for all variable values or potentially **false**. If the latter, find a **counterexample** to demonstrate (i.e., give specific value(s) of the variable(s) for which the expression is false).

**Hint**: **T**<sub>min</sub> often causes surprising results.

1. ux >= 02. ux > -13. if x > 0 & & y > 0 then (x + y) > 04. if  $x \ge 0$  then  $-x \le 0$ 5. *if* x <= 0 then -x >= 0if x>y 6. then -x < -y7. if x & 7 == 7 then (x << 30) < 0(x | -x) >> 31 == -18.