CSCI 2330 – Integer Logic Exercises

Let **ux** be an arbitrary unsigned int and let **x** be an arbitrary signed int. Assume that all constants are signed. For each statement below, decide whether the statement is always true or possibly false. If the latter, demonstrate with a counterexample.

Hint: T_{min} is often a useful counterexample.

1.   ux >= 0

2.   ux > -1

3.   x < 0   implies   (x * 2) < 0

4.   x > y   implies   -x < -y

5.   x > 0 && y > 0   implies   x + y > 0

6.   x >= 0   implies   -x <= 0

7.   x <= 0   implies   -x >= 0

8.   x & 7 == 7   implies   (x << 30) < 0

9.   (x | -x) >> 31 == -1