# Kevin Martin

# Syracuse University – CIS 675 Winter 2020

# 8.4.2 3/9/2020

To reduce 3SAT to MaxClique, we first will convert the 3SAT into a graph, setting each clause along one side of the graph, and then connect each node to every other node in the graph that is **not** its negation, or the other literals in its clause. We will then try to find a MaxClique of 4 (or however many clauses there are). Then, we set each node in the clause to TRUE. This way, each clause will have one TRUE literal, and there will also be no contradictions (because no node is connected to its negation.

1. The conversion is in polynomial time because we have just made a node for each literal and added edges.
2. We can recover our solution in polynomial time as well because all we have to do is look at which literals were selected as part of the MaxClique and set those to be TRUE
3. If there is a solution to the 3SAT, it gives us the solution to the MaxClique provided the MaxClique is 4
4. If we have found the a MaxClique of 4, then by examining the literals selected, we can conclude the 3SAT is satisfiable