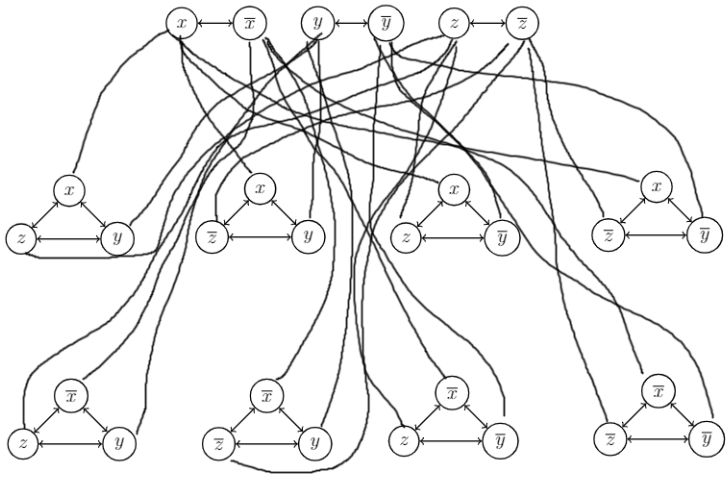
Vertex Cover is NPC Worksheet

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

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

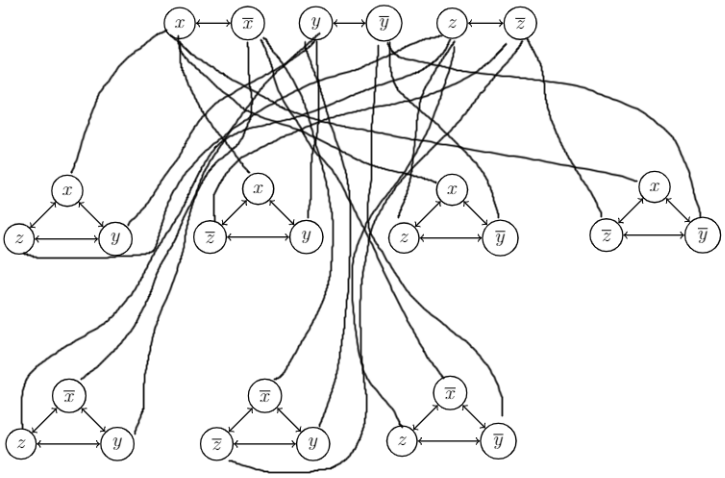
Is there a satisfying truth assignment for the 3-SAT instance above with $N = 3$ variables and $C = 8$ clauses?

Reduce the 3-SAT instance above to a VC instance using the method described in class and draw the resulting graph. Is there a vertex cover of size $N + 2C = 19$?



There is no vertex cover of size $N + 2C = 19$ since the original expression is not satisfiable.

Modify the 3-SAT instance by deleting the last clause (so that C becomes 7) and repeat the process above.



There is no vertex cover of size $N + 2C = 17$ since the original expression is not satisfiable.