①   ②   ③

$$(\overline{x_1} \lor x_2 \lor x_4 \lor \overline{x_7}) \land (x_3 \lor \overline{x_5}) \land (\overline{x_2} \lor \overline{x_3} \lor x_4 \lor \overline{x_6} \lor x_8)$$

Find a satisfying truth assignment for the SAT instance above.

$x_4 = 1$ or $x_8 = 1$

$x_4 = 1$ $x_a = 0$

$x_1 = 0$ or use

   $\lor = 0$

   $\land = 0$

Reduce the SAT instance above to a 3SAT instance using the method described in class.

~~$(\overline{x_1} \lor x_4 \lor \overline{v_1})$~~ ~~$(\overline{v_1} \lor x_2 \lor \overline{v_2})$~~

1: $(\overline{x_1} \lor x_4 \lor v_1) \land (\overline{v_1} \lor x_2 \lor \overline{x_7})$

2: $(x_4 \lor \overline{x_a} \lor v_r) \cap (x_c \lor \overline{x_c} \lor \overline{v_r})$

3: $(\overline{x_r} \lor \overline{x_c} \lor v_r) \cap (\overline{v_r} \lor x_4 \cap v_6)(\overline{v_5} \lor x_4 \cap x_8)$

Find a satisfying truth assignment for the 3SAT instance.

$x_1 = 0$ $x_4 = 0$ $v_1 = 0$

$x_r = 1$ $x_v = 0$ $v_r = 1$

$x_c = 1$ $x_\land = 0$ $v_c = 1$

$x_8 = 1$ $v_6 = 0$

$x_0 = 0$

In your own time, repeat for SAT instance that is not satisfiable.