25. Find an example, where both primal and dual LPs are infeasible.

$A = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$, $b = \begin{pmatrix} -1 \\ -1 \end{pmatrix} = -c$

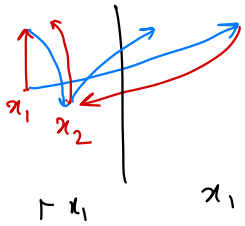
$-x_1 \le -1$
$x_2 \le -1$
$\max x_1 + x_2$
$x_1, x_2 \ge 0$

$\longrightarrow$

$-y_1 \ge 1$
$y_2 \ge 1$
$\min -y_1 - y_2$
$y_1, y_2 \ge 0$

4. Consider the above red-blue path problem in directed graphs. Prove that it is NP-hard. Some related NP-hard problems, which may be useful, are – longest path, hamiltonian path, shortest path with negative and positive edge weights.

if each clause has all vars



divide & conquer, repeat, ---