Due: Tuesday, 03/28/2023, before class.

1. Give an example of a linear program for which the feasible region is not bounded, but the optimal objective value is finite.

2. Write a linear program formulation corresponding to finding the maximum flow in the figure below. You do not need to solve the linear programming formulation.
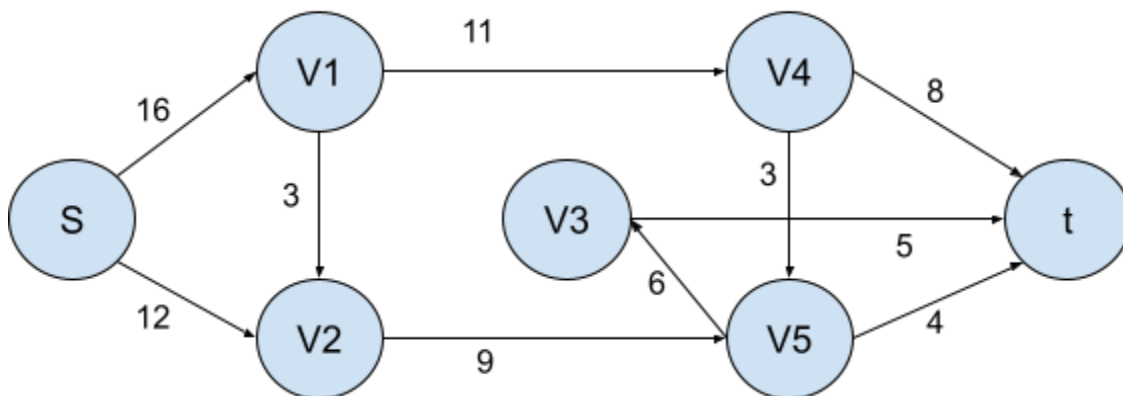
3. Use the simplex method to solve the following linear programming formulations:

    a. Minimize $-5x_1 + 3x_2$, subject to:

$$x_1 - x_2 \leq 1$$
$$2x_1 - x_2 \leq 2$$
$$x_1, x_2 \geq 0$$

    b. Maximize $5x_1 + 4x_2 + 3x_3$, subject to:

$$2x_1 + 3x_2 + x_3 \leq 5$$
$$4x_1 + x_2 + 2x_3 \leq 11$$
$$3x_1 + 4x_2 + 2x_3 \leq 8$$
$$x_1, x_2, x_3 \geq 0$$