

# ECH4905 ChemE Optimization HW 3

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## 1 Problem 1

Take the feasible set defined by the constraints

$$x_1 + x_2 \leq 3$$

$$x_1 + x_3 \leq 7$$

$$x_1 \geq 0$$

$$x_2 \geq 0$$

$$x_3 \geq 0$$

### 1.1 Part a

Express the constraints in standard form

**Solution:**

### 1.2 Part b

Identify the basic solutions, and among them, those that are feasible

**Solution:**

### 1.3 Part c

For each point corresponding to a feasible basic solution identify the basic directions

**Solution:**