QUIZ 3

Solve the different objective functions for below constraints using Graver bases

Constraints:

$$\begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 1 & 0 & 1 & 1 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 1 & 1 & 0 & 1 & 1 & 1 \\ 0 & 0 & 1 & 0 & 1 & 0 & 1 & 1 & 1 & 1 & 1 \end{bmatrix} \mathbf{x} = \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix}$$

$$\mathbf{x} \in \{0,1\}^{11}$$

Equivalently written as

$$\mathbf{A}\mathbf{x} = \mathbf{b}$$
$$\mathbf{x} \in \{0,1\}^{11}$$

Objectives functions:

Minimize below objective functions, where c = [2 4 4 4 4 4 5 4 5 6 5]

(a) for $f(x) = c^T x$

(b) for $f(x) = e^{c^T x^2}$

(c) for $f(x) = \sum_{i=0}^{10} log(c_i + x_i)$

(d) for $f(x) = \sum_{i=0}^{10} e^{c_i x_i^2}$