§6.5 (PART 2): FINDING THE DUAL OF AN LP

1.] Find the dual of the following normal maximization LP:

$$\text{Maximize:} \quad z = 2x_1 + x_2$$

$$
\begin{aligned}
\text{Subject to:} \quad -x_1 + x_2 &\leq 1 \\
x_1 + x_2 &\leq 3 \\
x_1 - 2x_2 &\leq 4 \\
x_1, x_2 &\geq 0
\end{aligned}
$$

2.] Find the dual of the following normal minimization LP:

$$\text{Minimize:} \quad z = x_1 - x_2$$

$$
\begin{aligned}
\text{Subject to:} \quad 2x_1 + x_2 &\geq 4 \\
x_1 + x_2 &\geq 1 \\
x_1 + 2x_2 &\geq 3 \\
x_1, x_2 &\geq 0
\end{aligned}
$$

3.] Find the dual of the following non-normal minimization LP:

$$\text{Minimize:} \quad z = 4x_1 + x_2$$

$$\begin{aligned}
\text{Subject to:} \quad 3x_1 + x_2 &= 3 \\
4x_1 + 3x_2 &\geq 6 \\
x_1 + 2x_2 &\leq 4 \\
x_1 \text{ urs}, \, x_2 &\geq 0
\end{aligned}$$