

**HW #6** Suppose we have a system  $\begin{pmatrix} 1 & 3 & 2 & 5 & 4 \\ 4 & 4 & -1 & 7 & 0 \end{pmatrix} x = \begin{pmatrix} -3 \\ 1 \end{pmatrix}$ . Rewrite this system in both tableau and dictionary formats to emphasize the basic solution for which  $x_1$ ,  $x_3$ , and  $x_5$  are zero. Does this basic solution satisfy  $x \geq 0$ ?

tableau format:

$$\begin{array}{ccccc|c} -13 & 1 & 19 & 0 & 28 & -26 \\ 8 & 0 & -11 & 1 & -16 & 15 \end{array}$$

dictionary format:

$$\begin{aligned} x_2 &= -26 + 13x_1 - 19x_3 - 28x_5 \\ x_4 &= 15 - 8x_1 + 11x_3 + 16x_5 \end{aligned}$$

This is not a feasible dictionary because the value of  $x_2$  is negative.