

Math 221  
Class Exercises: Feb. 2

$$x_1 = \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix} \quad x_2 = \begin{bmatrix} 8 \\ 2 \\ -1 \end{bmatrix} \quad x_3 = \begin{bmatrix} 4 \\ 2 \\ -9 \end{bmatrix}$$

Find a linear combination of  $x_1$ ,  $x_2$ , and  $x_3$  with the last entry in the vector equal to 2.

$$c_1 \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix} + c_2 \begin{bmatrix} 8 \\ 2 \\ -1 \end{bmatrix} + c_3 \begin{bmatrix} 4 \\ 2 \\ -9 \end{bmatrix} = \begin{bmatrix} * \\ * \\ 2 \end{bmatrix}$$

Can you find a linear combination  $x_1$ ,  $x_2$ , and  $x_3$  such that all the entries are equal to 2?

Is the vector  $b$  in the subspace spanned by  $v_1$  and  $v_2$ ?

$$v_1 = \begin{bmatrix} 5 \\ 2 \\ -1 \end{bmatrix} \quad v_2 = \begin{bmatrix} 1 \\ 1 \\ -2 \end{bmatrix} \quad b = \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$$