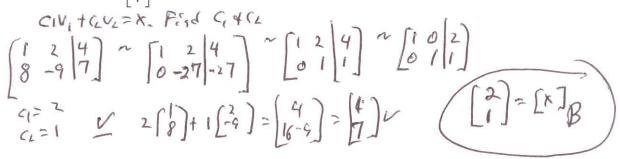
7. Let \mathcal{B} be the basis $v_1 = \begin{bmatrix} 1 \\ 8 \end{bmatrix}$, $v_2 = \begin{bmatrix} 2 \\ -9 \end{bmatrix}$ of \mathbb{R}^2 and let x be the vector $x = \begin{bmatrix} 4 \\ 7 \end{bmatrix}$. Find the coordinate vector $[x]_{\mathcal{B}}$ of x with respect to the basis \mathcal{B} .



8. Suppose a nonhomogeneous system of nine linear equations in ten unknowns has a solution for all possible constants on the right side of the equations. Is it possible to find two nonzero solutions of the associated homogeneous system that are not multiples of each other? Explain.

Consider A which is 9 ×10. We are told Ax = b has a solution for all $b \in \mathbb{R}^9$ So die colspane A = 9: die null spane A = # cols -9 = 10-9 = 1.

I. Every vector in the null spane of A is the multiply of on fixed various.

The answer is no.