

Name:

Problem 1: Find the dimension of the vector space of matrices

$$\begin{pmatrix} a & b \\ c & d \end{pmatrix}$$

such that

$$a + b + c = 0$$

$$a + b - c = 0$$

and $d \in \mathbb{R}$.

Show some work to justify your answer.

Tip: You can pretend the matrices are just vectors in \mathbb{R}^4 if you need.