Name:

Problem 1: Find a basis for, and the dimension of, the space of solutions to the system

$$\begin{aligned} x_1 - 4x_2 + 3x_3 - x_4 &= 0 \\ 2x_1 - 8x_2 + 6x_3 - 2x_4 &= 0 \end{aligned}$$

Hint: Start by solving the system and writing your answer in vector form.