

Name: _____ ID #: _____ Serial #: _____

1. Determine whether the vectors $v_1 = (10, 1, 1, 4)$, $v_2 = (5, -1, 0, 2)$, $v_3 = (0, 3, 1, 0)$ are linearly dependent or independent.

2. Find a basis and the dimension of the solution space of the system:

$$\begin{aligned}x_1 + 3x_2 + 4x_3 + 5x_4 &= 0 \\2x_1 + 6x_2 + 9x_3 + 5x_4 &= 0\end{aligned}$$