

Homework - July 9

Section 4.5

12. The span of the four vectors is equal to the column space of the matrix $A = \begin{bmatrix} 1 & -3 & -8 & -3 \\ -2 & 4 & 6 & 0 \\ 0 & 1 & 5 & 7 \end{bmatrix}$. We have $A \sim \begin{bmatrix} 1 & -3 & -8 & -3 \\ 0 & 1 & 5 & 7 \\ 0 & 0 & 0 & 8 \end{bmatrix}$. The dimension of $\text{Col } A$ is equal to the number of pivot positions which is 3.
26. If H is an n -dimensional subspace, then H has a basis with n vectors. These vectors are linearly independent in H and in V . Therefore, by Theorem 12, this set of vectors is also a basis for V , so $H = V$.