Name: _____ Section: _____

Math 54 Lec 006 Quiz 5

Friday, July 06, 2018

Justify your assertions; include detailed explanation, and show your work. Closed book exam, no sheet of notes and no calculator. This quiz is worth 9 points total.

1. (3 points) Let

$$H = \left\{ \begin{pmatrix} a \\ b \\ c \\ d \end{pmatrix} : a - 2b + c = 0, 2b + 3c = 0, a + b + 4c = 0 \right\}$$

be a subspace of $\mathbb{R}^4$. Find a basis for H and state the dimension of H.

2. (3 points) Let $B = \{7 + 5x, -3 - x\}$ and $C = \{1 - 5x, -2 + 2x\}$ be two basis for $P_1[x]$, find the change-of-coordinates matrix from B to C.

3. (3 points) True of False: If T is a linear transformation from V to $\mathbb{R}^4$, and if $ker(T) = \{0\}$, then $dim(V) \leq 4$.