

Quiz #9 for Math 250:1 & 5

4/25/2011

Name _____ Section (please circle one) **1** **5**

Vectors $v_1 = \begin{bmatrix} -1 \\ -1 \\ 0 \\ 1 \end{bmatrix}$, $v_2 = \begin{bmatrix} 2 \\ 0 \\ -1 \\ -1 \end{bmatrix}$, and $v_3 = \begin{bmatrix} -1 \\ 1 \\ 1 \\ 1 \end{bmatrix}$ span a 3-dimensional subspace S of \mathbb{R}^4 .

1. (7) Find an orthogonal basis $\{w_1, w_2, w_3\}$ for S .

Answer $w_1 = \begin{bmatrix} \\ \\ \\ \end{bmatrix}$, $w_2 = \begin{bmatrix} \\ \\ \\ \end{bmatrix}$, and $w_3 = \begin{bmatrix} \\ \\ \\ \end{bmatrix}$.

2. (3) The vector $w = \begin{bmatrix} 4 \\ -2 \\ -3 \\ -2 \end{bmatrix}$ is in S and $w = aw_1 + bw_2 + cw_3$. Find a , b , and c .

Answer $a = \underline{\hspace{2cm}}$, $b = \underline{\hspace{2cm}}$, and $c = \underline{\hspace{2cm}}$.