

Last Participation Quiz

Name _____

1. Suppose $\mathbf{u}, \mathbf{v}, \mathbf{w} \in \mathbb{R}^3$ form an orthonormal basis (meaning it's an orthogonal basis and $\|\mathbf{u}\|_2 = \|\mathbf{v}\|_2 = \|\mathbf{w}\|_2 = 1$), and $\mathbf{x} \in \mathbb{R}^3$ with $\mathbf{x} = a\mathbf{u} + b\mathbf{v} + c\mathbf{w}$. Write a , b and c in terms of $\mathbf{x}, \mathbf{u}, \mathbf{v}$ and \mathbf{w} .

2. Let $A = \begin{bmatrix} 0 & 1 \\ 2 & 7 \end{bmatrix}$. For the following values of λ , determine if λ is an eigenvalue for A , and if so find a basis for the corresponding eigenspace. (Note: you must show your work to receive full credit.)

(a) $\lambda = 0$

(b) $\lambda = 2$