Linear Algebra QuACK Course

1. What is a vector? An example or a drawing will suffice.

2. Please give an example of a matrix. What are they used for?

3. Let $\boldsymbol{v}$ be the vector $(2, 5, 7)$. What is $3 \cdot \boldsymbol{v}$?

4. Let $\boldsymbol{w}$ be the vector $(3, 4, 1)$. What is the dot product $\boldsymbol{v} \cdot \boldsymbol{w}$?

5. If you multiply a 2 x 3 matrix with a 3 x 7 matrix, what is the size of the matrix you will end up with? What about if you multiply a 4 x 4 with a 3 x 4?

6. Let A = $\begin{bmatrix} 2 & 1 \\ 5 & 0 \end{bmatrix}$ and B = $\begin{bmatrix} 1 & 1 \\ 4 & 2 \end{bmatrix}$. Calculate A + B, AB, and 2A – B.

7. What is the norm of the vector $(3, 1, 2, 4)$?

8. What is a unit vector?

9. What is the transpose of B?

10. What is an eigenvector? An eigenvalue?