

**Worksheet: Visualize vectors and matrices.**

One goal of this worksheet is to get to know other students in the class, so please work together. The other goals are to consider some basic questions about the objects of linear algebra, and to preview a big idea to come.

1. Here are two vectors:

$$\mathbf{v} = \begin{bmatrix} 3 \\ -5 \end{bmatrix}, \quad \mathbf{w} = \begin{bmatrix} 1 \\ -2 \\ 3 \end{bmatrix}.$$

Visualize them by simple sketches in the space below. (*No tricks implied; not challenging.*)

2. Here is a matrix:

$$A = \begin{bmatrix} 2 & 5 \\ 1 & -1 \\ 0 & 2 \end{bmatrix}.$$

Visualize the matrix  $A$  by simple sketches. (*You must decide what this means!*)

3. For this matrix the request is the same as for the previous one. Visualize by simple sketches:

$$B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}.$$