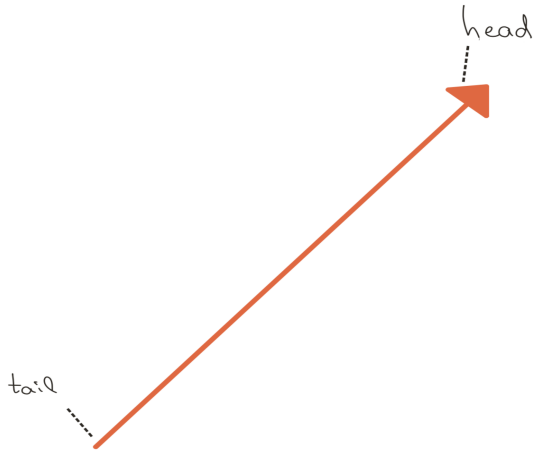
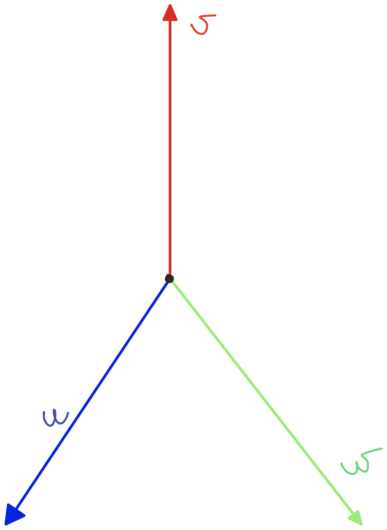
Vectors

You can think of vectors as arrows floating in space. Vectors have a head and a tail as you can see in the following picture:



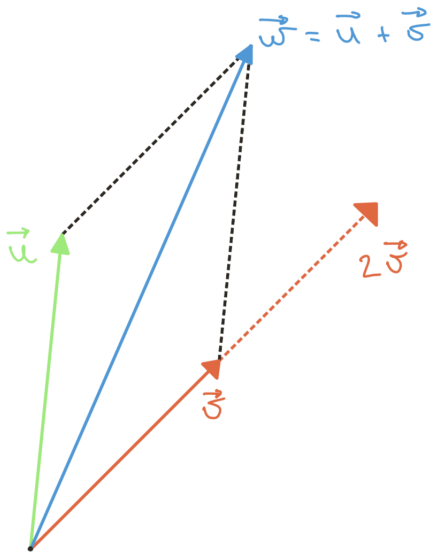
In the context of this tutorial I would like you to imagine vectors starting at some fixed point that I will refer to as origin. In other words, the tails of all vectors are fixed at the origin like you can see here:



The two operations that all vectors necessarily have are:

1) Multiplication by a scalar, a.k.a. scaling.
2) Addition.

The result of the above operations is always a vector:



Notation:

Throughout this tutorial, vectors will be written in small bold English letters. For example: **u**, **v**, **w**, **a**, **b**.