

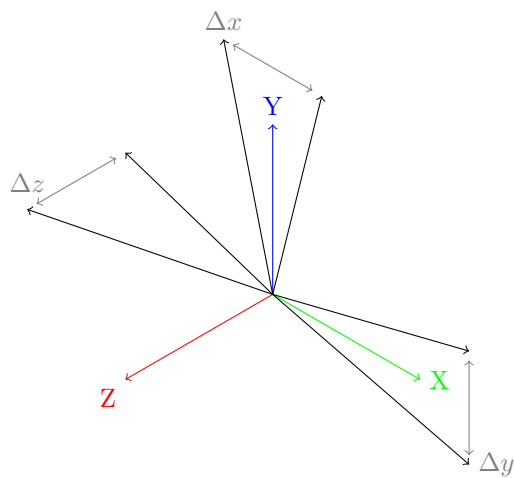
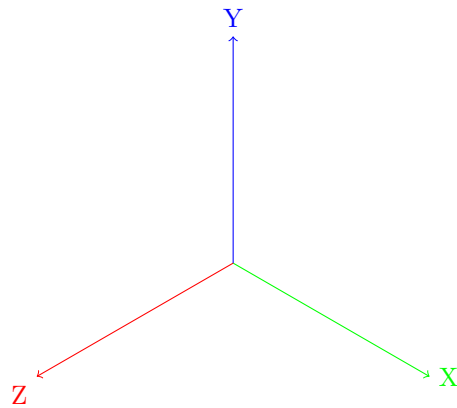
Vectors and 3-Dimensional Space

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1 Visualizing a 3D Space

Objects can move in 3 ways with respect to a position, and **vectors** are used to represent this. Vectors include both a direction and a distance.



2 Vectors

Mathematically, vectors are represented as a variable with an arrow on-top of it:

$$\vec{\mathbf{a}}$$

Above, we have a vector named **a**. This vector has various components:

$$\mathbf{a} = \text{magnitude (distance)}$$

$$\mathbf{a}_x = \text{x distance}$$

$$\mathbf{a}_y = \text{y distance}$$

$$\mathbf{a}_z = \text{z distance}$$