Math 304-08, Spring 2023
Additions and Corrections to the Textbook

C1. Suppose you have two points in $\mathbb{R}^3$, P and Q. Each point has coordinates, say $P : (a_1, a_2, a_3)$ and $Q : (b_1, b_2, b_3)$. The *position vector* of P is the vector $\overrightarrow{OP}$ from O (the origin) to P, and this vector is $(a_1, a_2, a_3) = \begin{bmatrix} a_1 \\ a_2 \\ a_3 \end{bmatrix}$. The reason for this name is that the position vector gives the position of P.

I've described this for $\mathbb{R}^3$ but it works the same way for $\mathbb{R}^n$ with any value of n.

C2. What the book calls the "position vector" from P to Q should not be called a position vector. It could be called a "displacement vector" but it is usually called "the vector from P to Q" and often the notation $\overrightarrow{PQ}$ is used. By the general addition formula for vectors, we have $\overrightarrow{PQ} = \overrightarrow{OQ} - \overrightarrow{OP}$.

To repeat: a position vector goes with a point; it is the vector $\overrightarrow{OP}$ from O to P.

C3.