PDF 7.010 Vectors in R^2 and R^3

Any two-dimensional vector has a unique representation on the Cartesian plane in R^2. The vector $\overrightarrow{OP}$ is a vector with its tail at the origin and its head at point P (a, b). Different ways of expressing this vector include:

1. $\overrightarrow{OP}$
2. $(a,\ b)$
3. $\overrightarrow{(a,\ b)}$

Similarly, any three-dimensional vector has a unique representation in R^3. The most common convention for expressing the *x*, *y*, and *z*-axes is the right-handed system of coordinates *(See diagram at top of pg. 312)*. The vector $\overrightarrow{OP}$ is a vector with its tail at the origin and its head at the point P (a, b, c). Different ways of expressing this vector include:

1. $\overrightarrow{OP}$
2. $(a,\ b, c)$
3. $\overrightarrow{(a,\ b, c)}$

Example 1: Using the right-handed system, sketch the vector $\overrightarrow{OP}$ where the coordinates of point P are (6,2,4).

Example 2: Using the right-handed system, sketch the vector $\overrightarrow{OP}$ where the coordinates of point P are (-2,1,-5).