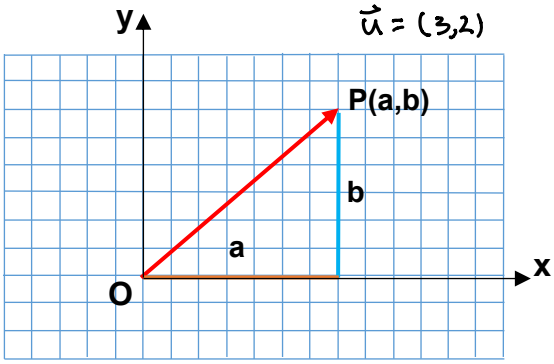
Vectors in R^2 and R^3

***NOTE**: R^2 refers to "Two Dimensional Space" and R^3 refers to "Three Dimensional Space"*

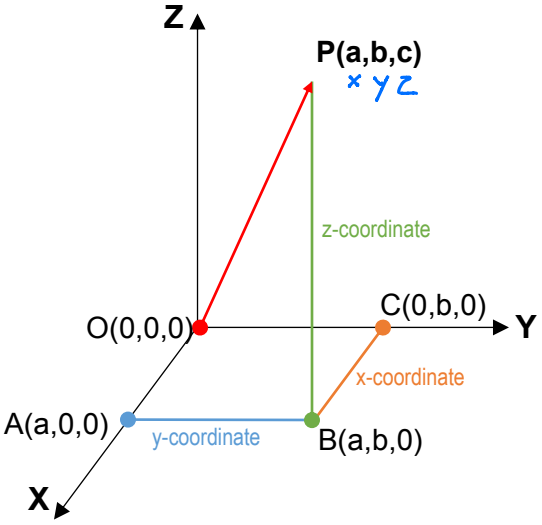
$\overrightarrow{OP}$ in R^2

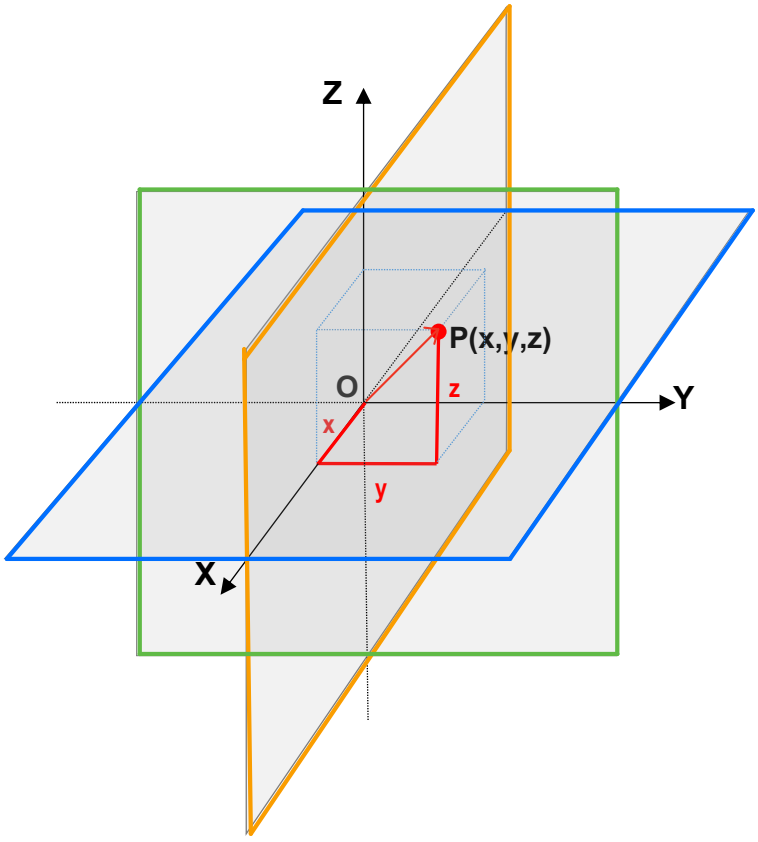
- Is considered a UNIQUE POSITION *VECTOR* *where its tail is at O*(0,0) and its head at P(a,b)
- *It is represented in component form (a,b) where* ***a*** *is the x-component and* ***b*** *is the y-component*



$\overrightarrow{OP}$ in R^3

- Is considered a UNIQUE POSITION *VECTOR* where its tail is at *O*(0,0,0) and its head at P(a,b,*c*)
- *It is represented in component form (a,b,c) where* ***a*** *is the x-component,* ***b*** *is the y-component, and* ***c*** *is the z-component*





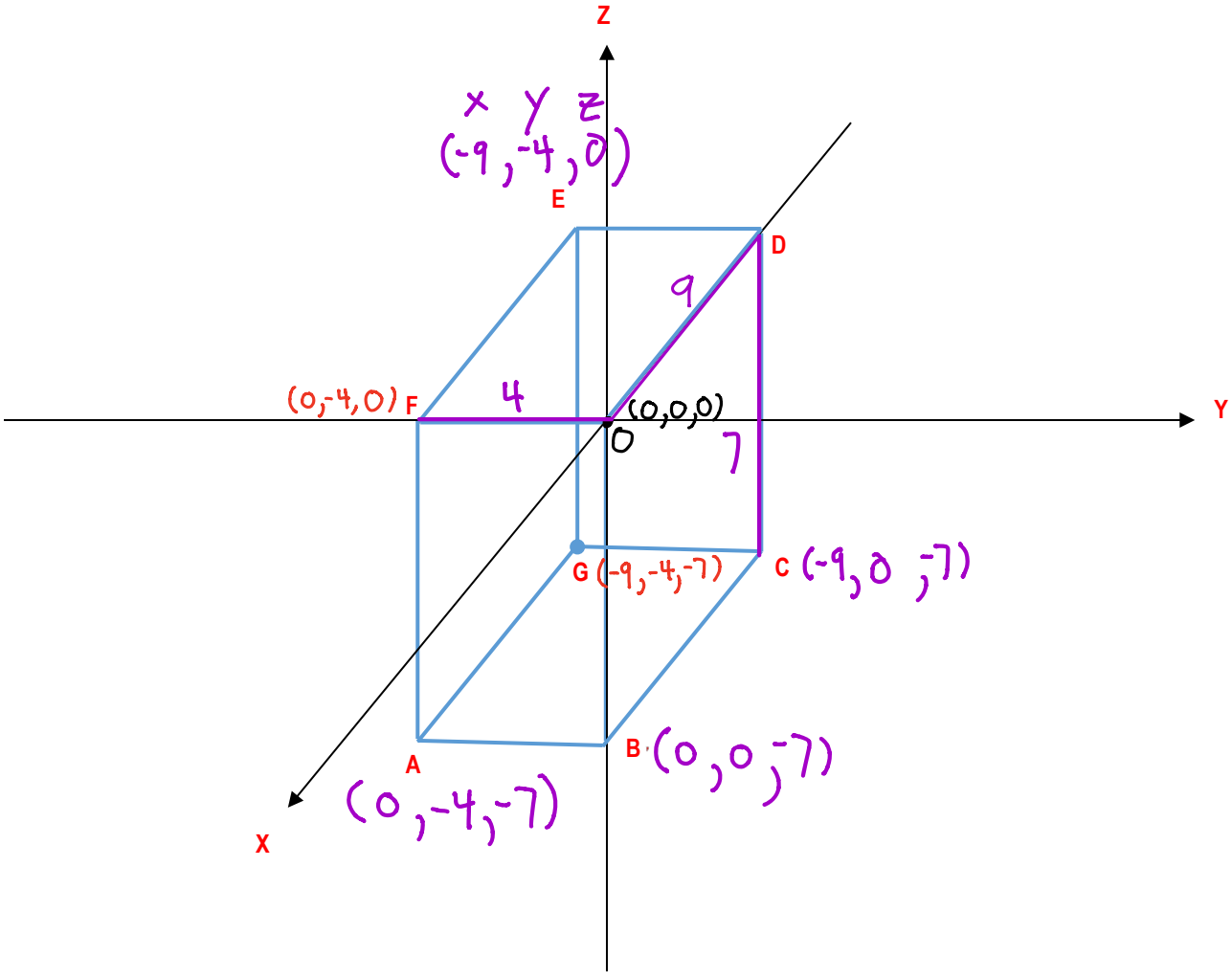
Note:

- Any point on the **XY-plane** will appear as **(x,y,0)**
- Any point on the **YZ-plane** will appear as **(0,y,z)**
- Any point on the **XZ-plane** will appear as **(x,0,z)**

Ex 1.

a) Given the following diagram, where G is the located at (–9, –4, –7) and F is at (0, –4, 0). Determine the coordinates of the unknown points.

FIX



A (0,-4,-7)
B (0,0,-7)
C (-9,0,-7)
D (-9,0,0)
E (-9,-4,0)

b) Write the mathematical description of the set of points in rectangle AFEG.

$(-9 \le x \le 0,\ y = -4,\ -7 \le z \le 0)$