Math 203 — Introduction to Cartesian Coordinates in Space

Problem 1. Consider the points $A = (1, 4, 2), B = (2, 6, 3)$, and $C = (4, 3, 1)$.

a. Plot the points on their own separate sets of xyz-axes. Make sure to label the axes and label the point on your rectangular box.

b. Find the distances between the three pairs of points.

Problem 2. Consider the equation $(x-4)^2 + (y+1)^2 + (z+3)^2 = 16$. This equation describes a sphere in 3d space. Give its center and its radius.

Problem 3. For each equation below, make a sketch of the corresponding 3d shape and describe the shape with a short phrase (eg. circular cylinder of radius 1 along z-axis).

a. $y^2 + z^2 = 9$

b. $z = y^2$

c. $x = 0$