Special Problem 2-4.12

Two points exist in space, denoted as point P_a and point P_b.

This is what we know about the location of point P_a:

1. It is located a distance of 2 units from the *z*-axis.

2. It lies **on** the y-z plane, in the portion where y > 0.

3. It is located 2 units **above** the x-y plane.

This is what we know about the location of P_b:

1. It is located a distance of 4 units from the origin.

2. It has a coordinate value $\theta = 90^\circ$.

3. It lies **on** the x-z plane, in the portion where x > 0.

Determine:

a) The **position vectors** denoting the locations of point P_a and P_b

b) The **directed distance** from point P_a to point P_b