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 $P_b$