Name _____ Date _____

Using Coordinates To Prove Theorems - Step-by-Step Lesson

Prove or disprove that the point $(3, \sqrt{7})$ lies on the circle centered at the origin, and containing the point $(0, 4)$.

Explanation:

We have start with the definition of a circle. A circle is the set of point equidistant from the center.

Therefore, if point $(3, \sqrt{7})$ lies on this circle, it is the same distance from the center as point $(0, 4)$.

If we prove the points are the same distance from the center, then they must lie on the same circle.

The center of this circle is the origin, or $(0, 0)$. The distance from the origin to the point $(0, 4)$.

$d_1 = \sqrt{(0 - 0)^2 + (4 - 0)^2}$

$d_1 = \sqrt{16}$

$d_1 = 4$

We have to find the distance between the center and point $(3, \sqrt{7})$

$d_2 = \sqrt{(3 - 0)^2 + (\sqrt{7} - 0)^2}$

$d_2 = \sqrt{16}$

$d_2 = 4$

So both the points lie on the circle.