:

Suppose (X,d) is a pseudometric space, $C(x;r) = \{y \quad X : d(x,y) < r\}$, and $B(x;r) = \{y \quad X : d(x,y) \quad r\}$.

Prove or give a counterexample:

1. $C(x;r)$ is an open set.   **2.** $B(x;r)$ is a closed set.

3. The closure of $C(x;r)$ is $B(x;r)$.   **4.** $C(x;r)$ is connected.