HOMEWORK 6

16. Using definition or theorems covered in class, show that for some $z \in \mathbb{R}^2$, $\mathbb{R}^2 \setminus \mathrm{seg}[0, z]$ is connected in $\mathbb{R}^2$.

17. Let X, Y be topological spaces and let $f : X \to Y$ be a continuous mapping. Prove or disprove that $f(C(x))$ is a component of $f(x)$ if $C(x)$ is a component of x.

18. Prove or disprove that $\mathbb{R}^2$ and $\mathbb{R}$ are homeomorphic.

DUE : OCTOBER 11, 2021