Exercises

E9.65 [ORP] Consider the example of the set $E \subseteq \mathbb{R}^2$ given by

$$E = \{(0,t) : \ -1 \leq t \leq 1\} \cup \left\{\left(x, \sin\frac{1}{x}\right) : \ x \in (0,1]\right\} \quad . \ (9.65)$$

Show that this set is closed, connected, but is not path connected.

Solution 1. *[ORQ]*

This set is sometimes called *closed topologist's sine curve* [37].