Given a dendrite X, we denote by $E(X)$ the set of all end points of X and by $R(X)$ the set of all its ramification points (i.e., points of order at least 3). Various structural as well as mapping characterizations of dendrites are collected in [Charatonik et al. 1998, Theorems 1.1 and 1.2, p. 228 and 230, respectively]. See also [Charatonik et al. 2000].

1.3.1 Preliminary properties

The following properties of dendrites are known (see e.g. [Nadler 1992, Chapter 10, p. 165], [Kuratowski 1968, §51, VI, p. 300] or [Whyburn 1942, p. 88]; compare also [Charatonik et al. 1998, Theorems 1.3 and 1.5, p. 233]).

1. Every subcontinuum of a dendrite is a dendrite (thus each dendrite is hereditarily locally connected).

2. Every connected subset of a dendrite is arcwise connected.

3. In any dendrite X the order of a point p is equal to the number of components of $X \setminus \{p\}$.

4. The set of all end points of a dendrite is 0-dimensional.

5. The set of all end points of a dendrite is a G_δ-set.

6. The set of all ordinary points (i.e., points of order 2) of a dendrite X is dense in X.

7. Every dendrite has at most countably many ramification points.

8. If m is the order of a ramification point in a dendrite, then $m \in \{3, 4, \dots, \omega\}$.

9. No dendrite contains points of order $\aleph_0$ or $\mathfrak{c}$ (i.e., each dendrite is a regular continuum).

10. In any dendrite the set of all its end points is dense if and only if the set of all its ramification points is dense.

11. Dendrites are absolute retracts. In fact, the class of all 1-dimensional absolute retracts coincide with the class of dendrites, [Borsuk 1967, Corollary 13.5, p. 138].

12. A continuum X is a dendrite if and only if for every compact space (continuum) Y and for every light confluent mapping $f : Y \to f(Y)$ such that $X \subset f(Y)$ there is a copy X' of X in Y for which the restriction $f|X' : X' \to X$ is a homeomorphism, [Charatonik et al. XXXXb].