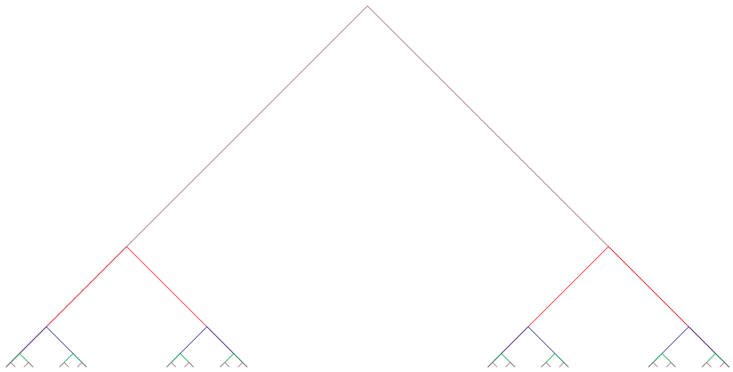

Figure 1.3.18: (A) Gehman dendrite

1.3.18 Gehman dendrite

One of the classical examples of dendrites with its set of end points closed is the *Gehman dendrite* . It can be described as a dendrite G having the set $E(G)$ homeomorphic to the Cantor ternary set C in $[0, 1]$ such that all ramification points of G are of order 3 (see [Gehman 1925, the example on p. 42]; see also [Nikiel 1983, p. 422-423] for a geometrical description; compare [Nikiel 1989, p. 82] and [Nadler 1992, Example 10.39, p. 186]). See Figure A.

The Gehman dendrite has the following properties.

1. The set $R(G)$ of all ramification points of G is discrete.
2. $E(G) = \mathrm{cl}\,(R(G)) \setminus R(G)$.
3. Each dendrite with an uncountable set of its end points contains a homeomorphic copy of the Gehman dendrite, [Arévalo et al. 2001, Proposition 6.8, p. 16].
4. If a continuum contains the Gehman dendrite, then it does not have the periodic-recurrent property, [Charatonik 1998, Theorem 3.3, p. 136].
5. A dendrite X contains the Gehman dendrite if and only if X does not have the periodic-recurrent property, [Illanes 1998, Theorem 2, p. 222].

1.3.19 Modifications of the Gehman dendrite

The concept of the Gehman dendrite has been generalized in [Arévalo et al. 2001, Section 4, p. 4-10] as follows.

1. For each natural number $n \geq 3$ there exists topologically unique dendrite G_n dendrite G_n such that
   (a) $\mathrm{ord}\,(p, G_n) = n$ for each point $p \in R(G_n)$;