Additional Notes on Snowflake Graphs

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1 Radial tree with constant branching number M

Let ℓ_i be the length of edges in generation i, let b_i be the branching number of generation i and let $R = R(\vec{m}, \vec{\ell}, k)$ be the reflection on the root of the radial tree.

Question: When is $R = 0$? *Hypothesis:* If and only if $\vec{\ell} = (\ell, \ell, \ldots)$.

Furthermore, we hypothesize that the RQG with $\vec{\ell} = (\ell, \beta\ell)$ has root reflection equal to that of the RQG with $\vec{\ell} = (\ell, \ell)$ and $L = -c\frac{d^2}{dx^2}$, where $c > 0$ is a parameter depending on β.

Test the hypothesis for $N = 3$, with $1 < b_i < 10$, and ℓ_1 and ℓ_2 as free parameters; we can normalize so that $\ell_1 = 1$. This gives us a finite number of functions in one variable, ℓ_2, for which the hypothesis is easy to verify.