$$L = \lfloor \log_d(1 - s(1-d)) \rfloor$$

$$E = s - \frac{1 - d^L}{1 - d}$$

$$R = d^L + E - \left\lceil \frac{E}{d} \right\rceil$$

where d is the number of dimensions (branching factor), s is the total number of nodes, R gives the maximum total number of roots. (d must be an integer greater than 1; s is an integer)