

**Some new results on independent domination
polynomial of a graph**

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An independent dominating set of the simple graph $G = (V, E)$ is a vertex subset that is both dominating and independent in G . The independent domination polynomial of a graph G is the polynomial $D_i(G, x) = \sum_A x^{|A|}$, summed over all independent dominating subsets $A \subseteq V$. A root of $D_i(G, x)$ is called an independence domination root. We first enumerate independent dominating sets in several classes of graphs made by a linear or cyclic concatenation of basic building blocks. Explicit recurrences are derived for the number of independent dominating sets of these kind of graphs. We also investigate the independent domination polynomials of some generalized compound graphs. As consequence, construct graphs whose independence domination roots are real.