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The largest real root of the independence polynomial of a unicyclic graph

The independence polynomial of a graph G , denoted $I(G, x)$, is the generating polynomial for the number of independent sets of each size. It is known that for every graph G , the root of $I(G, x)$ of smallest modulus, denoted $\xi(G)$, is real. Extending results due to Csikvári (2013) and answering an open question due to Oboudi (2018), we find the graphs that minimize/maximize $\xi(G)$ among all connected (well-covered) unicyclic graphs. Our methods involve showing a stronger result on a partial order on graphs induced by their independence polynomials evaluated at small negative values. This is joint work with Iain Beaton.