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## Chromatic Polynomial of Snow Graph

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The chromatic polynomial is introduced by George David Birkhoff in 1912. It defined as follows: for a given graph  $G$ , the number of ways of colouring the vertices with  $k$  colours, such that any two adjacent vertices are coloured differently is called the chromatic polynomial of graph  $G$ . In this paper, we create a general formula for the chromatic polynomial for a special graph, called Snow graph ( $S_{n,1,m}$ ) which is obtained from the union of wheel graph and star graph. The snow graph has three parameters and the shape of a snowflake. The general formula for the chromatic polynomial of snow graph is constructed using the polynomials of wheel graph and star graphs. So we obtained that the chromatic polynomial of the Snow Graph as  $P(S_{n,1,m}) = k [(k - 2)^{n-1} - (-1)^n(k - 2)] \times (k - 1)^{mn}$ ; where  $n$  is the order of the wheel graph and  $m$  is the number of leaves in the star graph. Using this general formula we can find the chromatic polynomial of a Snow Graph with any order.

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