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Problem3

Assume that n is the number of vertices of G and m is the number of edges of G.

For the vertex part, every vertex has 3 choices of color but only one can be chosen for one vertex. The logical expression for it will need 4 clauses for each vertex. Generally, we can say there will be (n x 4) clause in the first part.

Then in the edge part, for every edge which will make the two vertices do not choose the same color so for every edge, this statement determines that every edge will have 3 clauses as the possible color choice. In general, we can say there will be (m x 3) clause in the second part.

In conclusion, for graph G we can conclude the expression as total clause = n x 4 + m x 3