

## 3-colorability

Suppose I want to figure out if a graph  $G = (V, E)$  has a proper 3-coloring of the vertices.

My friend says it does but I'm not sure, and my graph is too big for me to look at all the possible colorings.

Question to class: How many possible colorings are there, as a function of the number of vertices?

How can my friend convince me?