



The solution in the diagram is a variation on the solution by Laurent Lessard at <http://www.laurentlessard.com/bookproofs/>. This variation is by Jim Tilley and me. So the strategy of the diagram is really by Lessard, Tilley, and me. This diagram shows how Alice can force Bob to use a sixth color in 8 moves. She begins by forcing a red-green-blue triangle in the obvious way. Then, for each vertex she places, Bob can use a new color or an old one. The arrow indicates the color used on the new vertex. The children of each parent must all be the same underlying graph. Note that all the graphs in the third row are identical. Each of the six leaves in the tree has five colors on the exterior face. So Alice can finish with a new exterior vertex connected to these five, forcing Bob to use a sixth color. Note that Alice always moves in the exterior face. Also note that there are two branches of length 8. Is there a solution with only one branch of length 8?