

Attendance Quiz for Lecture 16

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1. What is the chromatic index of the complete graph K_n ? Prove it!

$$\chi'(K_n) = \begin{cases} n & \text{if } n \text{ odd} \\ n-1 & \text{if } n \text{ even} \end{cases}$$

Take any K_n for n odd, and draw as an ' n -gon' with a vertex on the top, and interior edges parallel to exterior edges. Then we can generate a coloring with n edges by taking each of the exterior edges to be its own color, and each of the interior edges to be the color of the edge it is parallel.

For the even case, we can add an additional vertex v , connected to every other vertex.

Each edge $\{v, w\}$ of V can be colored by the color of the edge opposite to w , as it will never touch $\{v, w\}$.

