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N A Newman* (newman@troy.edu), Troy University Dothan, 400 Adams Hall, 501 University Drive, Dothan, AL 36303, and **Matt Noble**. *A Few Questions on Color-Critical Subgraphs*.

In our work, we define a k -tuple of positive integers (x_1, \dots, x_k) to be a χ -sequence if there exists a k -chromatic graph G such that for each $i \in \{1, \dots, k\}$, the order of a minimum i -chromatic subgraph of G is equal to x_i . Denote by \mathcal{X}_k the set of all χ -sequences of length k . A very difficult question is to determine, for a given $(x_1, \dots, x_k) \in \mathcal{X}_k$, the set of all integers y such that $(x_1, \dots, x_k, y) \in \mathcal{X}_{k+1}$. We propose a few variants of this question and elaborate upon a number of partial results along the way. (Received September 10, 2019)