1047-05-96   **Jacob Fox** and **Po-Shen Loh*** (`ploh@princeton.edu`), Mathematics Department, Princeton
University, Princeton, NJ 08544-1000, and **Benny Sudakov**. *Large induced trees in K_r-free
graphs.*

For a graph G, let $t(G)$ denote the maximum number of vertices in an induced subgraph of G that is a tree. We study the problem of bounding $t(G)$ for graphs which do not contain a complete graph K_r on r vertices. This problem was posed twenty years ago by Erdős, Saks, and Sós. Substantially improving earlier results of various researchers, we prove that every connected triangle-free graph on n vertices contains an induced tree of order $\sqrt{n}$. When $r > 3$, we also show that $t(G) > \frac{1}{4}\log_r n$ for every connected K_r-free graph G of order n. Both of these bounds are tight up to small multiplicative constants, and the first one disproves a recent conjecture of Matoušek and Šámal. (Received January 20, 2009)