962-52-1391 **Dan P Ismailescu*** (ismailes@cims.nyu.edu), Courant Institute of Mathematical Sciences, New York University, 251 Mercer Street, New York City, NY 10012. *On a question of Erdős.*

Given $k \geq 3$ and a set $A_n$ of $n$ points in the plane, we shall denote by $t_k(A_n)$ the number of lines containing precisely $k$ of the points. Erdős (1962) raised the following problem: how large $t_k(A_n)$ can be, given that there are no $(k+1)$ collinear points? Let $L_k(n)$ denote the maximum of $t_k(A_n)$ when $A_n$ varies over all sets of $n$ points in the plane that contain no collinear $(k+1)$ -tuple. Most of the results obtained so far are for the particular case $k = 3$ (also known as "the orchard problem"). Much less is known for $k \geq 4$. Grünbaum (1976) proved that

$$L_k(n) \geq c_k\, n^{(k-1)/(k-2)}.$$

We present a different construction which implies that

$$L_k(n) \geq c_k^{'}\, n^{log(k+4)/log(k)}.$$

This matches Grünbaum's bound for $k = 4$ and it is strictly better for all $5 \leq k \leq 35$. (Received October 03, 2000)