1012-13-206 **Ben Richert*** (brichert@calpoly.edu), Mathematics Department, California Polytechnic State University, San Luis Obispo, CA 93407-0403. *The Convexity Conjecture.* Preliminary report.

Let $\mathbb{A} = \{a_1, \ldots, a_n\}$ where $2 \leq a_1 \leq \cdots \leq a_n$ are integers, and let k be a field. Then a monomial ideal $L \in R = k[x_1, \ldots, x_n]$ is said to be an $\mathbb{A}$-lex plus powers ideal if L is minimally generated by $x_1^{a_1}, \ldots, x_n^{a_n}$ and monomials $m_1, \ldots, m_t$ such that for all $d \in \mathbb{N}$, if $n \in R_d$, $\deg(m_i) = d$, and $n \geq_{\text{lex}} m_i$ for some $1 \leq i \leq n$, then $n \in L$. Fix a Hilbert function $\mathcal{H}$. It is a conjecture of Evans that if L and L' are respectively $\mathbb{A}$-lex plus powers and $\mathbb{B}$-lex plus powers ideals both with Hilbert function $\mathcal{H}$ such that $\mathbb{A} \leq \mathbb{B}$ (in the sense that $a_i \leq b_i$ for all i), then for each $\mathbb{C}$ such that $\mathbb{A} \leq \mathbb{C} \leq \mathbb{B}$, there is a $\mathbb{C}$-lex plus powers ideal $L_{\mathbb{C}}$ with Hilbert function $\mathcal{H}$. We explore the relationship between this conjecture and the Eisenbud-Green-Harris conjecture which states that an $\mathbb{A}$-lex plus powers ideal with a given Hilbert function $\mathcal{H}$ exists whenever there exists an ideal I which contains a regular sequence in degrees $a_1, \ldots, a_n$ and attains the Hilbert function $\mathcal{H}$. (Received September 20, 2005)