(3) Prove or disprove: If $\{a_n\}_{n=1}^{\infty}$ diverges to $-\infty$ then $\{-a_n\}_{n=1}^{\infty}$ diverges to $+\infty$.

Assume that $\{a_n\}_{n=1}^{\infty}$ diverges to $-\infty$. To show that $\{-a_n\}_{n=1}^{\infty}$ diverges to $+\infty$, let $M \in \mathbb{R}$. By def. of diverges to $-\infty$, there is some $N \in \mathbb{R}$ s.t. for all $n > N$ in $\mathbb{N}$, we have $-a_n < -M$. For such n, we have $a_n > M$. Thus, for the same N, we have $a_n > M$ for all $n > N$. This means that $\{a_n\}_{n=1}^{\infty}$ diverges to $+\infty$.