

Name: _____

Pid: _____

1. Prove that $1 + 2 + \dots + 2^{n-1} = 2^n - 1$.

2. Show that $(1 + x)^n \geq 1 + nx$ for every $n \in \mathbb{N}$ and $x \geq -1$.

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3. Let $a_n = 2a_{n-1} - a_{n-2}$ for $n \geq 2$, $a_1 = 2$, and $a_0 = 1$. Find a closed formula (no summation signs) for the recurrent sequence a_n .