

Name: _____ ID #: _____ Serial #: _____

1. Prove by induction that $1 + 2^1 + 2^2 + \dots + 2^{n-1} = 2^n - 1$ for each $n \in \mathbb{N}$.

2. Prove by induction that $n! < n^n$ for all integers $n \geq 2$.