

Name: _____

Directions: Show all work.

1. **[5 points]** Let $a_0 = 2$ and $a_n = 2a_{n-1} - n$ for $n \geq 1$. Guess a formula for a_n and prove your formula is correct.

2. **[5 points]** Let $b_0 = 3$ and $b_n = 2b_{n-1} - n$ for $n \geq 1$. Prove that $b_n = 2^n + n + 2$.