Name:_____

Lecture 13, class activity. Induction Part I.

1. We will give three proofs of the claim: $n^2 + n$ is even for all $n \in \mathbb{N}$.
   (a) First factor, and see what you get from there.
   (b) Now think of the formula for the triangular number T_n.
   (c) Now do a proof by induction.

2. Prove that $6|(n^3 - n)$ for all $n \in \mathbb{N}$.

3. **Tricky algebra! (maybe)** Prove that $5|(n^5 - n)$ for all $n \in \mathbb{N}$.