Type 2: Divisibility Proofs

There are different techniques for the inductive step. For the following example we will consider 2 different methods.

Example

Prove by induction that $3^{2n}+11$ is divisible by 4 for all positive integers $n$.

Basis step:

Assumption:

Inductive step: method 1 Inductive step: method 2

Conclusion:

Example:

Prove by induction that $8^{n}-3^{n}$ is divisible by 5.

Question:

Prove by induction that $n^{3}-7n+9$ is divisible by 3 for all positive integers $n$.

Ex 8B Pages 162