

Name: _____

NetID: _____ Lecture: B

Discussion: Friday 11 12 1 2 3 4

Use (strong) induction to prove the following claim:

Claim: For all integers $a, b, n, n \geq 1$, if $a \equiv b \pmod{7}$ then $a^n \equiv b^n \pmod{7}$.

Use this definition in your proof: $x \equiv y \pmod{p}$ if and only if $x = y + kp$ for some integer k .

Proof by induction on n .

Base case(s):

Inductive Hypothesis [Be specific, don't just refer to "the claim"]:

Rest of the inductive step:

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Use (strong) induction to prove the following claim

Claim: $\sum_{k=0}^n p^k = \frac{p^{n+1} - 1}{p - 1}$, for all natural numbers n and all real numbers $p \neq 1$.

Proof by induction on n .

Base case(s):

Inductive Hypothesis [Be specific, don't just refer to "the claim"]:

Rest of the inductive step: