

Precalculus

10-05 Mathematical Induction

- Proofs for _____ formulas
- Show it works when _____
- Show it works for _____

Steps for Proof by Induction

1. Show it works for _____
 2. _____ formula works for $n = k$
 3. Show it works for _____
- If proving _____ formula use $S_{k+1} = S_k + a_{k+1}$

Prove $5 + 7 + 9 + 11 + 13 + \dots + (3 + 2n) = n(n + 4)$

Prove $1(1 - 1) + 2(2 - 1) + 3(3 - 1) + \dots + n(n - 1) = \frac{n(n-1)(n+1)}{3}$

Prove $(n + 1)! > 2^n$ where $n \geq 2$

Prove 4 is a factor of $5^n - 1$