

Sketch an outline of the proof of the following statement. We don't know anything about f or g .

$$f(n) > g(n) \text{ for all } n = 1, 2, 3, \dots$$

Base case: Show that $f(1) > g(1)$

Induction hypothesis: Assume $f(k) > g(k)$ for some k .

Inductive step: This would probably be done via:

$$f(k + 1) > \text{Apply induction hypothesis and do math} > g(k + 1)$$

Thus $f(k + 1) > g(k + 1)$.

Therefore by induction, $f(n) > g(n)$ for all indices n .