

Proving properties about Fibonacci numbers

Definition of function $f : \mathbb{Z}^+ \rightarrow \mathbb{Z}$:

- ▶ $f(1) = f(2) = 1$ and
- ▶ $f(n) = f(n-1) + f(n-2)$ for $n \geq 3$

We wish to prove $f(n) \geq 2n$ for $n \geq 8$.

We check the first few cases...

$$f(8) = f(7) + f(6) = 21$$

$$f(9) = f(8) + f(7) = 34$$

$$f(10) = f(9) + f(8) = 55$$

So the statement holds for $n = 8, 9, 10$.