Let $T(n)$ be the number of filled triangles in a Sierpinski’s triangle after $n$ iterations where $T(0)$ is a single filled triangle. Observe that $T(n) = 3T(n - 1)$.

Use induction to prove that $T(n) = 3^n$. 
Consider the recurrence relation:
\[
T(n) = 5T(n - 1) - 6T(n - 2)
\]
\[
T(0) = 2
\]
\[
T(1) = 5
\]

Claim: \(\forall n \in \mathbb{Z}_0^+ : T(n) = 2^n + 3^n\)

- We prove the claim using a proof by strong induction on:
  - Base case(s):
  - Inductive hypothesis (IHOP):
  - Inductive step:
    - We want to show that:
      - Proof:

- Therefore by the principle of mathematical induction: