

- If needed, look at the LaTeX for this Exercise 38 for help with the LaTeX for Math Induction exercises.
 - For a Strong Induction proof, in the Base Step check the least possible number of integer(s) as so to have a correct proof.
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Exercise. A variant of Exercise 4.3.11.

§4.3
p209

Define the sequence $\{a_n\}_{n=1}^{\infty}$ recursively by

$$a_1 = 1$$

$$a_2 = 5$$

$$\text{and if } n \in \mathbb{N}, \text{ then } a_{n+1} = a_n + 2a_{n-1}.$$

Prove that

$$a_n = 2^n + (-1)^n$$

for each $n \in \mathbb{N}$.