

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

$$a_1 = 1$$

$$a_2 = 5$$

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

Prove that

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

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

.....

DELETE this whole sentence and THEN put your answer to ALL parts down here.