

MATH310 Homework 2022-07-27
Due Gradescope 11:59pm 2022-07-29

1. Use strong induction to prove that any postage greater than or equal to 18 cents can be made from 3 and 10 cent stamps. [40 pts]
2. Define the recursive sequence: [40 pts]

$$a_1 = 3, a_2 = 6 \text{ and } a_n = 5a_{n-1} - 6a_{n-2} + 2 \text{ for } n \geq 3.$$

Use strong induction to prove that $a_n = 1 + 2^{n-1} + 3^{n-1}$ for all $n \in \mathbb{N}$.

3. Use weak induction to prove that for $n \geq 2$ that a $2^n \times 2^n$ chessboard with a corner piece missing can be covered completely by pieces shaped like: [20 pts]

