

Advanced Higher Maths
SQA 2022 Paper 2
Question 9

The matrix A is given by $A = \begin{pmatrix} 3 & -2 \\ 0 & 1 \end{pmatrix}$.

Prove by induction that

$$A^n = \begin{pmatrix} 3^n & 1-3^n \\ 0 & 1 \end{pmatrix}, \forall n \in \mathbb{N}.$$

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Answer:

Proof. See marking instructions.