3/2/21 Class Notes

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*notes from MAT300 Lecture

Contents

1 Example

Example: Show that $9|(4^n + 6n - 1)$ for every $n \in \mathbb{Z}$.

Proof. 1) n = 0. Then $4^n + 6n - 1 = 4^0 - 1 = 0 = 0 \cdot 9$ and so $9|(4^n + 6n - 1)$ when n = 0.

2) $p(n) \rightarrow p(n+1)$ $4^{4+1} + 6(n+1) - 1 = 4 \cdot (4^n + 6n - 1) - 18n + 9$ $= 4 \cdot 9k - 18n + 9 = 9(4k - 2n + 1)$ and $4k - 2n + 1 \in \mathbb{Z}$ and so $9|(4^{n+1} + 6(n+1) - 1)$ □