



মহাশিক্ষা বিভাগ (সি)
DEPARTMENT OF EDUCATION (S)

Government of Manipur

CHAPTER 3 MATHEMATICAL INDUCTION

NOTES

➤ Principle of Mathematical Induction

It states that if $P(n)$ be a mathematical proposition such that

- i) $P(1)$ is true, and
- ii) $P(K + 1)$ is true whenever $P(K)$ is true where K is an arbitrary value of n .

i.e. $P(K)$ is true $\Rightarrow P(K + 1)$ is true

then $P(n)$ is true $\forall n \in N$

➤ Steps required in proving a mathematical proposition or theorem by method of mathematical induction

1. **Verification:** Verify the validity of $P(n)$ for $n = 1$ (the least value of n)
2. **Inductive property:** Assume $P(n)$ is true for $n = k$ (i.e. for some value k of n), and then deduce that $P(k + 1)$ is also true.
3. **Conclusion:** $P(n)$ is true $\forall n \in N$.



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