

Template for L^AT_EXproof

Prove by induction that the following statement is true for all positive integers.

$$\sum_{i=1}^n i^2 = \frac{n(n+1)(2n+1)}{6} \quad (1)$$

Proof.

Base step – Show that eq. (1) holds for the base case, when

$$\dots \quad (2)$$

Inductive step – First, assume that statement is true for all p .

$$\dots \quad (3)$$

Second, prove that the statement also holds true for $p + 1$.

$$\dots \quad (4)$$

Conclusion – And we are done! We have proven by induction that the statement in eq. (1) is indeed true.

□

Tips on writing math in align mode

- Multiple statements can be included in one align environment. Force a new line with `\\`
- Every statement will get an index like (1). Use the `\notag` command to suppress this when not needed
- Multiple statements can be aligned neatly using the `&` character as an anchor point. Normally you want to place this beside the `=` symbol of each statement as follows: `&=`
- If you need a particular symbol then refer to the cheat sheet.

For example, if $x = 6$, what is y ?

$$\begin{aligned} x + 3y &= 9 \\ (6) + 3y &= 9 \\ 3y &= 9 - 6 \\ y &= \frac{9 - 6}{3} \\ y &= \frac{3}{3} \\ y &= 1 \end{aligned}$$