

Reductio Ad Absurdum

In a reductio ad absurdum, we assume the opposite of what we hope to prove and look for a contradiction. For example:

Assume there is some greatest natural number. Call it A .

That number plus one is also a natural number.

Obviously, $A + 1 > A$. (A plus 1 is greater than A .)

So there is a natural number greater than A .

This is impossible, since A is assumed to be the greatest natural number.

\therefore : There is no greatest natural number.

This argument form is traditionally called a reductio. Its full Latin name is reductio ad absurdum, which means 'reduction to absurdity.' In a reductio, we assume something for the sake of argument| for example, that there is a greatest natural number. Then we show that the assumption leads to two contradictory sentences| for example, that A is the greatest natural number and that it is not.

In this way, we show that the original assumption must have been false.