

# ON-IND-1 improved version

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```
<< goedel52.n34; << tests.m

:Package Title: GOEDEL52.N34      2002 April 21 at 8:40 p.m.

It is now:  2002 Apr 21 at 20:48

Loading Simplification Rules

TESTS.M                      Revised 2002 April 16

weightlimit = 40

Context switch to `Goedel`Private is needed for ReplaceTest

Just ignore the error message about Unterminated use of BeginPackage

Get::bebal : Unterminated uses of BeginPackage or Begin in << tests.m.
```

## ■ Improved statement of Lemma ON-IND-1

The statement of Lemma **ON-IND-1** in my JAR paper on Ordinal Number Theory contains an unneeded literal. Omitting this literal, we obtain the following improved statement:

```
implies[member[x, intersection[omega, y]],
member[0, union[x, y]]]

or[member[0, x], member[0, y], not[member[x, omega]], not[member[x, y]]]
```

## ■ The proof

The proof of Lemma **ON-IND-1** uses Corollary **ON-7-A**, and an equality substitution.

```
Map[not, SubstTest[and, implies[p1, or[p3, p5]], implies[and[p2, p5], p4],
not[implies[and[p1, p2], or[p3, p4]]],
{p1 -> member[x, omega],
p2 -> member[x, y],
p3 -> member[0, x],
p4 -> member[0, y],
p5 -> equal[0, x]}]]

or[member[0, x], member[0, y], not[member[x, omega]], not[member[x, y]]] == True

or[member[0, x_], member[0, y_],
not[member[x_, omega]], not[member[x_, y_]]] := True
```