

Theorem TC-CO-BC

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```
<< goedel52.a2; << tests.m

:Package Title: GOEDEL52.A2   2001 January 2 at 8:20 a.m.

It is now:   2001 Jan 4 at 6:8

Loading Simplification Rules

TESTS.M           Revised 2000 December 30

weightlimit = 30

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.

composite[TC, BIGCUP] // VSNormality

composite[TC, BIGCUP] == composite[BIGCUP, TC]
```

We also proved this in **Otter** by a vertical section method.

```
composite[TC, BIGCUP] := composite[BIGCUP, TC]

Map[VERTSECT, Assoc[TC, BIGCUP, inverse[E]]]

composite[IMAGE[TC], IMAGE[BIGCUP]] == composite[IMAGE[BIGCUP], IMAGE[TC]]

composite[IMAGE[TC], IMAGE[BIGCUP]] := composite[IMAGE[BIGCUP], IMAGE[TC]]

Map[VERTSECT, Assoc[TC, TC, inverse[E]]]

composite[IMAGE[TC], IMAGE[TC]] == IMAGE[TC]

composite[IMAGE[TC], IMAGE[TC]] := IMAGE[TC]

AssocTest[{TC, BIGCUP, inverse[E], inverse[S]}]

True
composite[inverse[E], BIGCUP] == composite[inverse[E], BIGCUP, inverse[S]]

Assoc[inverse[E], inverse[E], inverse[S]] // Reverse

composite[inverse[E], BIGCUP, inverse[S]] == composite[inverse[E], BIGCUP]

composite[inverse[E], BIGCUP, inverse[S]] := composite[inverse[E], BIGCUP]
```

```
Assoc[TC, BIGCUP, POWER] // Reverse  
composite[BIGCUP, TC, POWER] == TC  
  
composite[BIGCUP, TC, POWER] := TC  
  
Assoc[TC, BIGCUP, inverse[BIGCUP]] // Reverse  
composite[BIGCUP, TC, inverse[BIGCUP]] == TC  
  
composite[BIGCUP, TC, inverse[BIGCUP]] := TC  
  
Assoc[TC, BIGCUP, SINGLETON] // Reverse  
composite[BIGCUP, TC, SINGLETON] == TC  
  
composite[BIGCUP, TC, SINGLETON] := TC
```