

# COMPACT and its complement are proper classes

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```
In[1]:= SetDirectory["i:"]; << goedel62.08a; << tools.m

:Package Title: goedel62.08a          2004 October 8 at 9:55 a.m.

It is now: 2004 Oct 9 at 11:2

Loading Simplification Rules

TOOLS.M                      Revised 2004 September 25

weightlimit = 40
```

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## COMPACT is a proper class

```
In[2]:= Map[not, SubstTest[implies, and[subclass[u, v], member[v, V]],
      member[u, V], {u → FINITE, v → COMPACT}]]

Out[2]= member[COMPACT, V] == False

In[3]:= % /. Equal → SetDelayed

In[4]:= member[COMPACT, x] // AssertTest

Out[4]= member[COMPACT, x] == False

In[5]:= member[COMPACT, x_] := False
```

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## complement[COMPACT] is a proper class

```
In[6]:= Map[member[#, V] &,
      ImageComp[inverse[POWER], COARSER, complement[image[COARSER, FINITE]]]]

Out[6]= member[complement[image[COARSER, FINITE]], V] == False

In[7]:= % /. Equal → SetDelayed

In[8]:= Map[member[#, V] &,
      ImageComp[BIGCUP, COARSER, complement[image[COARSER, FINITE]]]] // Reverse

Out[8]= member[complement[COMPACT], V] == False

In[9]:= % /. Equal → SetDelayed
```

```
In[10]:= member[complement[COMPACT], x] // AssertTest
```

```
Out[10]= member[complement[COMPACT], x] == False
```

```
In[11]:= member[complement[COMPACT], x_] := False
```