

## [2.26] `limit()` fails with piecewise functions

The CAS has problems with limits of piece-wise functions defined with `when()`. For example,

```
limit(when(x=0,1,sin(x)/x),x,0)
```

returns itself, instead of the correct limit of 1. This problem occurs with limits of the form

```
limit(when(x=a,b,f(x)),x,0)
```

only when the first `when()` argument is an equality, and the complete limit at zero is taken. To get around this failure, use an independent variable of, for example,  $k-1$ , and evaluate the limit at 1. The original example becomes

```
limit(when(k-1=0,1,sin(k-1)/(k-1)),k,1)
```

which correctly returns 1.

*(Credit to Martin Daveluy)*