

## The *TLC* Module versus Mathematics

The standard *TLC* module defines a few operators that, as implemented by TLC, lie outside the domain of mathematics. In mathematics, the formula  $e = e$  is true for every expression  $e$ . However, using these special operators, you can write a formula of the form  $e = e$  that TLC can find equal to FALSE. For example, one of these operators is *JavaTime*, which TLC evaluates to be a function of the current date and time (the number of milliseconds elapsed since 0:00 UTC on 1 January 1970). TLC could obtain the value FALSE when it evaluates the formula  $JavaTime = JavaTime$ .

When you use such an operator, you leave the world of mathematics and enter the world of programming. You should never use any of these operators in a specification—neither an I/O specification nor a system specification. You should use them only to help TLC check a specification. The operators defined in the *TLC* module that are outside the domain of mathematics are:

*JavaTime*      *RandomElement*      *TLCGet*

There are other operators defined in the *TLC* module that make no sense as part of a specification—for example, *PrintT*. However, the values TLC obtains when evaluating them are consistent with their TLA<sup>+</sup> definitions.