**NIntegrate**

*NIntegrate*[f, {x, xmin, xmax}] gives a numerical approximation to the integral \(\int_{xmin}^{xmax} f \, dx\).

Multidimensional integrals can be specified, as in *Integrate*. *NIntegrate* tests for singularities at the end points of the integration range. *NIntegrate*[f, {x, x0, x1, ..., xk}] tests for singularities at each of the intermediate points xi. If there are no singularities, the result is equivalent to an integral from x0 to xk. You can use complex numbers xi to specify an integration contour in the complex plane. *NIntegrate* uses an adaptive algorithm, which recursively subdivides the integration region as needed. *Points* specifies the number of initial points to choose in each dimension. *MinRecursion* specifies the minimum number of recursive subdivisions to try. *MaxRecursion* gives the maximum number. *SingularValueDepth* specifies the number of recursive subdivisions before changing variables. *WorkingPrecision:"Precision"* specifies the number of digits used in internal computations.

The following options can be given in *NIntegrate*:

- **AccuracyGoal**: 6 digits of absolute accuracy sought
- **MaxRecursion**: 6 maximum number of recursive subdivisions
- **MinRecursion**: 1 minimum number of recursive subdivisions
- **Points**: Automatic initial number of sample points
- **SingularityDepth**: 3 number of recursive subdivisions before changing variables
- **WorkingPrecision**: Precision[1.] the number of digits used in internal computations

You should realize that with sufficiently pathological functions, the algorithms used by *NIntegrate* can give wrong answers. In most cases, you can test the answer by looking at its sensitivity to changes in the setting of options for *NIntegrate*. *N[Integrate[...]]* calls *NIntegrate*. See page 470.