TI-83+: Important Functions

nDeriv(

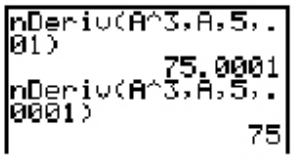
nDeriv((numerical derivative) returns an approximate derivative of *expression* with respect to *variable*, given the *value* at which to calculate the derivative and ε (if not specified, the default is 1E-3). **nDeriv(** is valid only for real numbers.

nDeriv(*expression*,*variable*,*value*[,ε])

nDeriv(uses the symmetric difference quotient method, which approximates the numerical derivative value as the slope of the secant line through these points.

$$f'(x) = \frac{f(x+\varepsilon) - (f(x-\varepsilon)}{2\varepsilon}$$

As ε becomes smaller, the approximation usually becomes more accurate.



You can use **nDeriv(** once in *expression*. Because of the method used to calculate **nDeriv(**, the TI-83 Plus can return a false derivative value at a nondifferentiable point.

fnInt(

fnInt((function integral) returns the numerical integral (Gauss-Kronrod method) of *expression* with respect to *variable*, given *lower* limit, *upper* limit, and a *tolerance* (if not specified, the default is 1E-5). **fnInt(** is valid only for real numbers.

fnInt(*expression*,*variable*,*lower*,*upper*[,*tolerance*])

Tip: To speed the drawing of integration graphs (when **fnInt(** is used in a Y= equation), increase the value of the **Xres** window variable before you press GRAPH.