

Calculating the Derivative at a Point

$$g(t) := 2t^2 - 3t$$

Define a function.

Numerically

$$\frac{d}{dt}g(2) = \blacksquare$$

You cannot substitute the point value into the function before taking the derivative. The variable t is not recognized by the numeric processor, so Mathcad will return an error.

$$t1 := 2$$

$$\frac{d}{dt1}g(t1) = 5$$

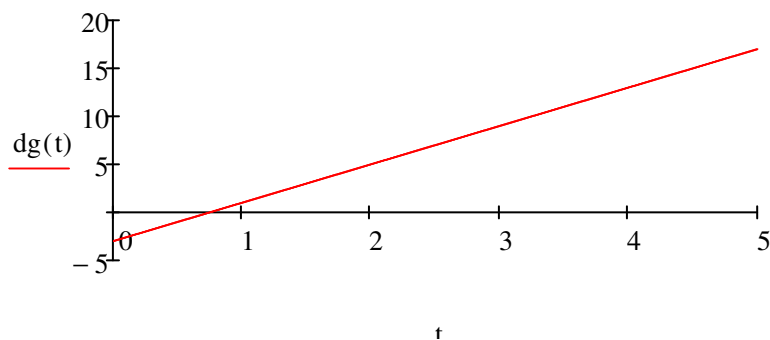
You can assign a value to the independent variable then take the derivative.

$$dg(t) := \frac{d}{dt}g(t)$$

For more versatility, define a function that is the derivative of your original function.

$$dg(2) = 5$$

This new function can then be evaluated numerically at a point or used with the plot operator.



Symbolically

$$\frac{d}{dt}g(2) \rightarrow 0$$

If you evaluate the function at a point and then take the derivative symbolically Mathcad returns zero because it evaluates the function and then takes the derivative of a constant with respect to time.

$$t2 := 2$$

$$\frac{d}{dt}g(t2) \rightarrow 5$$

As with the numeric processor, you can define the independent variable, then take the derivative.

$$g'(t) := \frac{d}{dt}g(t) \rightarrow 4 \cdot t - 3$$

However, it is often more useful to evaluate the derivative symbolically and the results to a function.

$$g'(2) \rightarrow 5$$

This new function can then be evaluated symbolically at a point or used with plot operator.

