>

Expand sin(x) about x=0 up to a ninth order.

```
> taylor(sin(x),x=0,9);
```

$$x - \frac{1}{6}x^3 + \frac{1}{120}x^5 - \frac{1}{5040}x^7 + O(x^9)$$

Expand ln(x) about x=1 up to a 5th order.

```
> taylor(ln(x),x=1,5);
```

$$x - 1 - \frac{1}{2}(x-1)^2 + \frac{1}{3}(x-1)^3 - \frac{1}{4}(x-1)^4 + O((x-1)^5)$$

Expand exp(x) about x=0 up to 4th order.

```
> taylor(exp(x),x=0,4);
```

$$1 + x + \frac{1}{2}x^2 + \frac{1}{6}x^3 + O(x^4)$$

>

taylor - Taylor series expansion

Calling Sequence

taylor(expr, eq/nm, n)

Parameters

expr - expression

eq/nm - equation (such as x = a) or name (such as x)

n - (optional) non-negative integer

Description

The function taylor computes the Taylor series expansion of expr, with respect to the variable x, about the point a, up to order n.

The taylor function is a restriction of the more general series function. See series for a complete explanation of the parameters.

If the result of the series function applied to the specified arguments is a Taylor series then this result is returned; otherwise, an error-return occurs.

Examples

> taylor(exp(x), x=0, 4);

> taylor(1/x, x=1, 3);

Also refer to http://faculty.uml.edu/mstick/Links/AMS_4_2000_paper_update.pdf (pages 24 and 25) for TI-89 implementation of Taylor and Maclaurin Series.