

First derivative: 4 point rules

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$$\frac{\partial f(x_0)}{\partial x} = \frac{2f(x_3) - 9f(x_2) + 18f(x_1) - 11f(x_0)}{6h} + O(h^3)$$

$$\frac{\partial f(x_0)}{\partial x} = \frac{-f(x_2) + 6f(x_1) - 3f(x_0) + -2f(x_{-1})}{6h} + O(h^3)$$

$$h = x_{i+1} - x_i$$

Approximation formula for the first derivative. These 4 point equations have third order accuracy.

Symbol list:

- x_0 The x-value location of the derivative of f(x)
- h The distance between grid points