

Example:

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$$f(x) = \cos(x) ; \quad f(\pi/3) = ?$$

$$f(x_{i+1}) = f(x_i) + f'(\Delta x) + \frac{f''(\Delta x)^2}{2!} + \frac{f'''(\Delta x)^3}{3!} + \frac{f^4(\Delta x)^4}{4!} + \frac{f^5(\Delta x)^5}{5!} + \frac{f^6(\Delta x)^6}{6!} + R^7$$

$$f(x_{i+1}) = \cos(x_i) - \sin(x_i)\Delta x - \cos(x_i)\frac{(\Delta x)^2}{2!} + \sin(x_i)\frac{(\Delta x)^3}{3!} + \cos(x_i)\frac{(\Delta x)^4}{4!} - \sin(x_i)\frac{(\Delta x)^5}{5!} - \cos(x_i)\frac{(\Delta x)^6}{6!} + error$$

$$f(\pi/3) = \cos(\pi/4) - \sin(\pi/4)(\pi/12) - \cos(\pi/4)\frac{(\pi/12)^2}{2} + \sin(\pi/4)\frac{(\pi/12)^3}{6} + \cos(\pi/4)\frac{(\pi/12)^4}{24} - \sin(\pi/4)\frac{(\pi/12)^5}{120} - \cos(\pi/4)\frac{(\pi/12)^6}{720} + error$$

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