



bracket

$[a, b]$

~ Round off

$$f_0 = 1.0$$

$$y_0 = 1.0 + f_0$$

$$y_1 = 1.0 + f_0/2$$

$$y_2$$

$$\vdots$$

$$y_n = 1.0 + \left(\frac{f_0}{2^n}\right) = 1.0$$



1 Taylor series

$$f(x+h) = f(x) + hf'(x) + \frac{h^2}{2!} f''(x) + \dots$$

$$\boxed{f(x+h) = f(x) + \underline{hf'(x)} + \frac{h^2}{2} f''(\eta)}.$$

$$\eta \in [x, x+h]$$

$$f'(x) \approx \frac{f(x+h) - f(x)}{h} - \frac{1}{2} h f''(\eta)$$

$$f'(x) = \frac{f(x+h) - f(x)}{h} + \underline{\underline{O(h)}}$$



$$\frac{d\vec{r}}{dt} = \vec{a}(\vec{r}, \vec{v})$$

$$\frac{d\vec{r}}{dt} = \vec{v}$$

$$x, x+h$$

$$t, t+\tau$$

$$\vec{r}(t+\tau) - \vec{r}(t) + \mathcal{O}(\tau) = \vec{v}(t)$$

$$\vec{r}(t+\tau) = \vec{r}(t) + \tau \vec{v}(t) + \mathcal{O}(\tau^2)$$