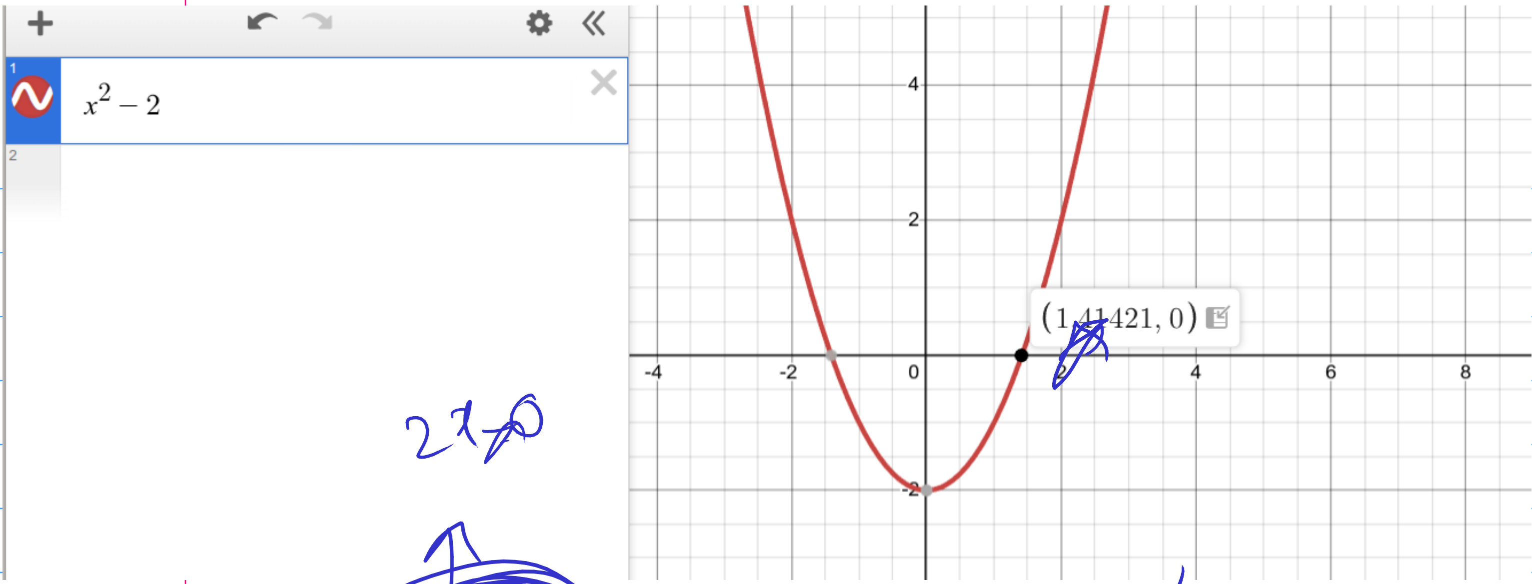


$2x \neq 0$

$f(x) = x^2 - 2$ $\quad x_0 = 2$

$$x_n = x_n - \frac{f(x_n)}{f'(x_n)}$$

$$x_{n+1} = x_n - \frac{x_n^2 - 2}{2x_n}$$

$|f(x)| \leq \varepsilon_m$

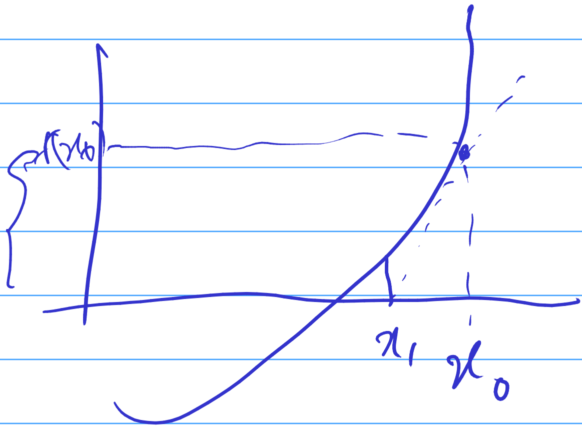
it	x	
0	2.0000	$\to \lvert 2^2 - 2 \rvert = 2$
1	1.5000	$\to \lvert 1.5^2 - 1.5 \rvert =$
2	1.4167	$\to \lvert (1.4167)^2 - 1.4167 \rvert$
3	1.4142	$\to$
4	1.4142	$\to$
5	1.4142	$\to$
6	1.4142	

$x_0 \quad x_1$

$x_2 \quad x_3 \quad x_4 \quad x_5 \quad x_6$

$$\leq \varepsilon_m$$

$$\lambda = |g'(x^*)| = \begin{cases} \left.\begin{array}{l} 0 \Rightarrow \text{Superlinear} \\ 0-1 \Rightarrow \text{linear} \end{array}\right] \text{Convergent} \\ \lambda \geq 1 \Rightarrow \text{Divergent} \end{cases}$$

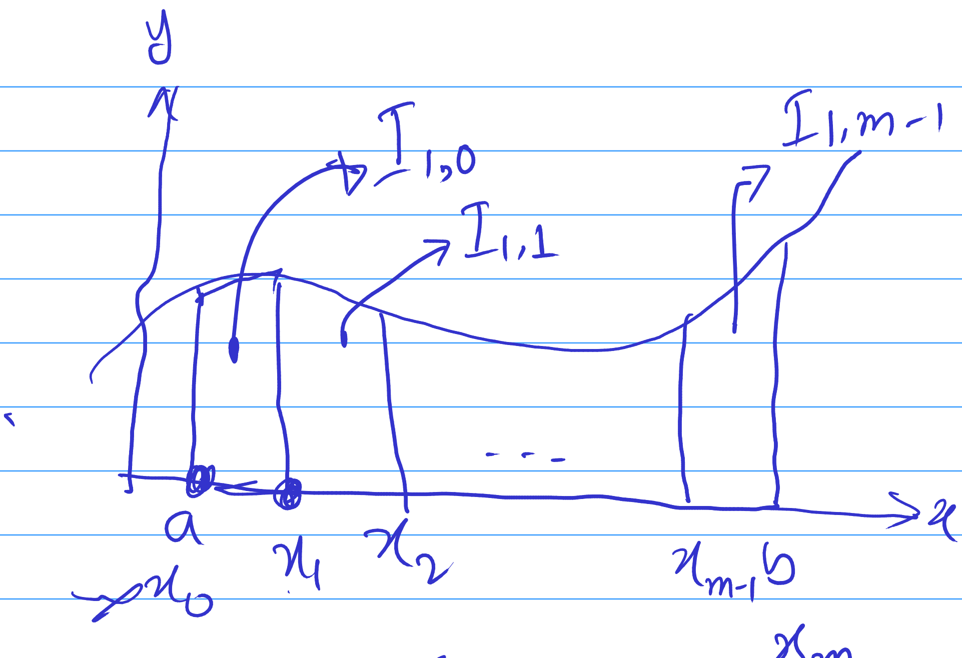


$$f'(x_0) = \text{slope} = \frac{f(x_0)}{x_0 - x_1}$$

$$\Rightarrow \quad x_0 - x_1 = \frac{f(x_0)}{f'(x_0)}$$

$$\Rightarrow \quad x_1 =$$

$h = \frac{b-a}{m}$



m subinterval

$$I_{1,j} = \frac{h}{2}[f(x_j) + f(x_{j+1})]$$

$$I_{1,0} = \frac{h}{2}[f(a) + f(x_1)]$$

$$I_{1,1} = \frac{h}{2}[f(x_1) + f(x_2)]$$

$I_{1,j}$

$$I_{1,m-1} = \frac{h}{2}[f(x_{m-1}) + f(b)]$$

$$C_{1,m} = \frac{h}{2}[f(a) + 2f(x_1) + 2f(x_2) + \dots + 2f(x_{m-1}) + f(b)]$$

$\frac{f'''(z)}{3!}$

$\left| \quad \right|_{max}$

$f'''(z) = 2\cos z - \sin z$

$f'''(z) \le 2\cos z + \sin z$

$= |2 \times 1| + |\frac{1}{2}|$

$= 2 + 1$

$f'''(z) = e^z$

$x \in [0, 2]$

$e^0 = 1$

$e^2 =$

$[0, \frac{1}{2}]$

$x + \sin x$

$2 + 1 = 3$

$2\boxed{\sin x} - \cos x$

$= 2 \times 1 + 1$

$= 3$

$$\frac{f^{(n+1)}(\xi)}{(n+1)!}\int_a^b (x-a)(x-b)\,dx$$

Trape $I_1 \longrightarrow n=1 \longrightarrow \{x_0, x_1\}$ $x_0 = a$, $x_1 = b$

Simp $I_2 \longrightarrow n=2 \longrightarrow \{x_0, x_1, x_2\}$ $x_0 = a$

$x_1 = \frac{a+b}{2}$

$x_2 = b$

$$[u_1 \quad u_2 \quad u_3]$$

$$\downarrow$$

$p_1 \quad p_2 \quad p_3$ — orthogonal

$$\Big\downarrow \text{normalize}$$

$$q_1 \quad q_2 \quad q_3$$

$2x + 3y + 5z = 12$

$x + 3y + 9z = 18$

$$A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$$

$$|A| = a(ei - fh) - b(di - gf) + c(dh - eg)$$

In terms of Cofactor:

$$\left[a_x \begin{vmatrix} e & f \\ h & i \end{vmatrix} \right] - \left[b_x \begin{vmatrix} d & f \\ g & i \end{vmatrix} \right] + \left[X^c \begin{vmatrix} d & e \\ g & h \end{vmatrix} \right]$$

$\det(A) \neq 0$

$v_1 = \begin{bmatrix} 3/3 \\ \\ \\ \end{bmatrix}$ $\vec{v_2} =$ $v_3 =$

$v_1^T v_2 = 0$

$v_2^T v_3 = 0$ → orthogonal

$v_1^T v_3 = 0$

→ $\{v_1, v_2 v_3\}$ set is a orthonormal set

$v_1^T v_1 = 1$

$v_2^T v_2 = 1$ normal

$v_3^T v_3 = 1$

$$\begin{bmatrix} 1 & 5 & 8 \\ 2 & 8 & 3 \\ 3 & 3 & 12 \end{bmatrix}$$

12

$$a = \begin{bmatrix} 1 & 3 & 2 \end{bmatrix}$$

$$a\,a^T$$

$$\begin{bmatrix} 1 & 3 & 2 \end{bmatrix} \begin{bmatrix} 1 \\ 3 \\ 2 \end{bmatrix} =$$

$$\vec{v}_1 = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$$

$$v_1 = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$$