Bab 4
Metode Interpolasi Linier

Oleh :

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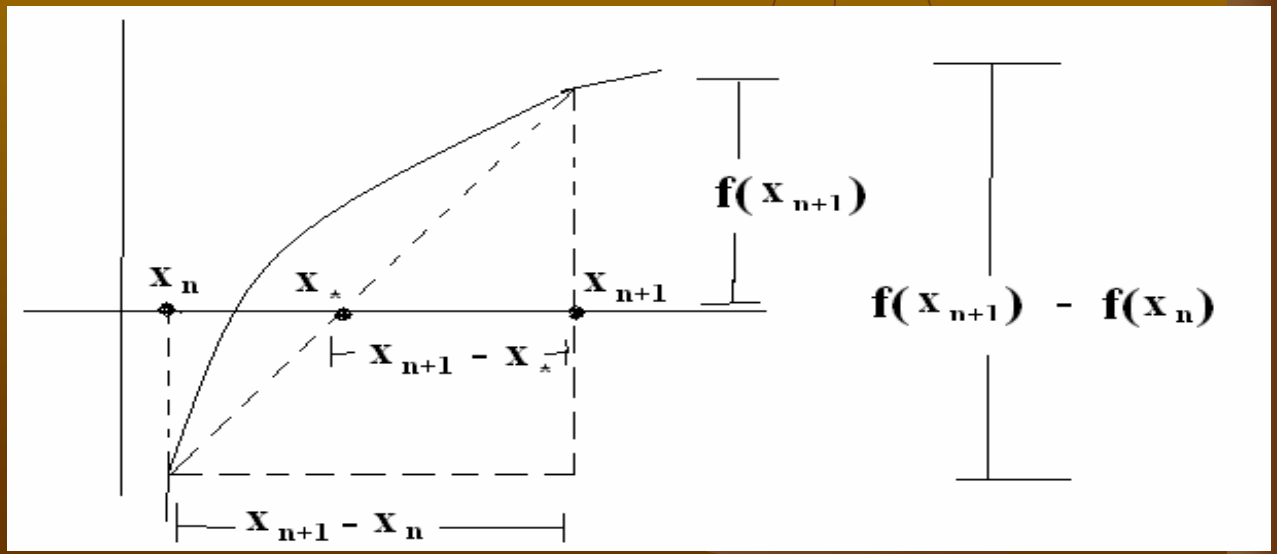
Pendahuluan

- Metode ini dikenal dengan metode false position/regula false
- Metode alternatif yang memanfaatkan pengertian grafis dengan menghubungkan titik-titik pada sebuah garis lurus.



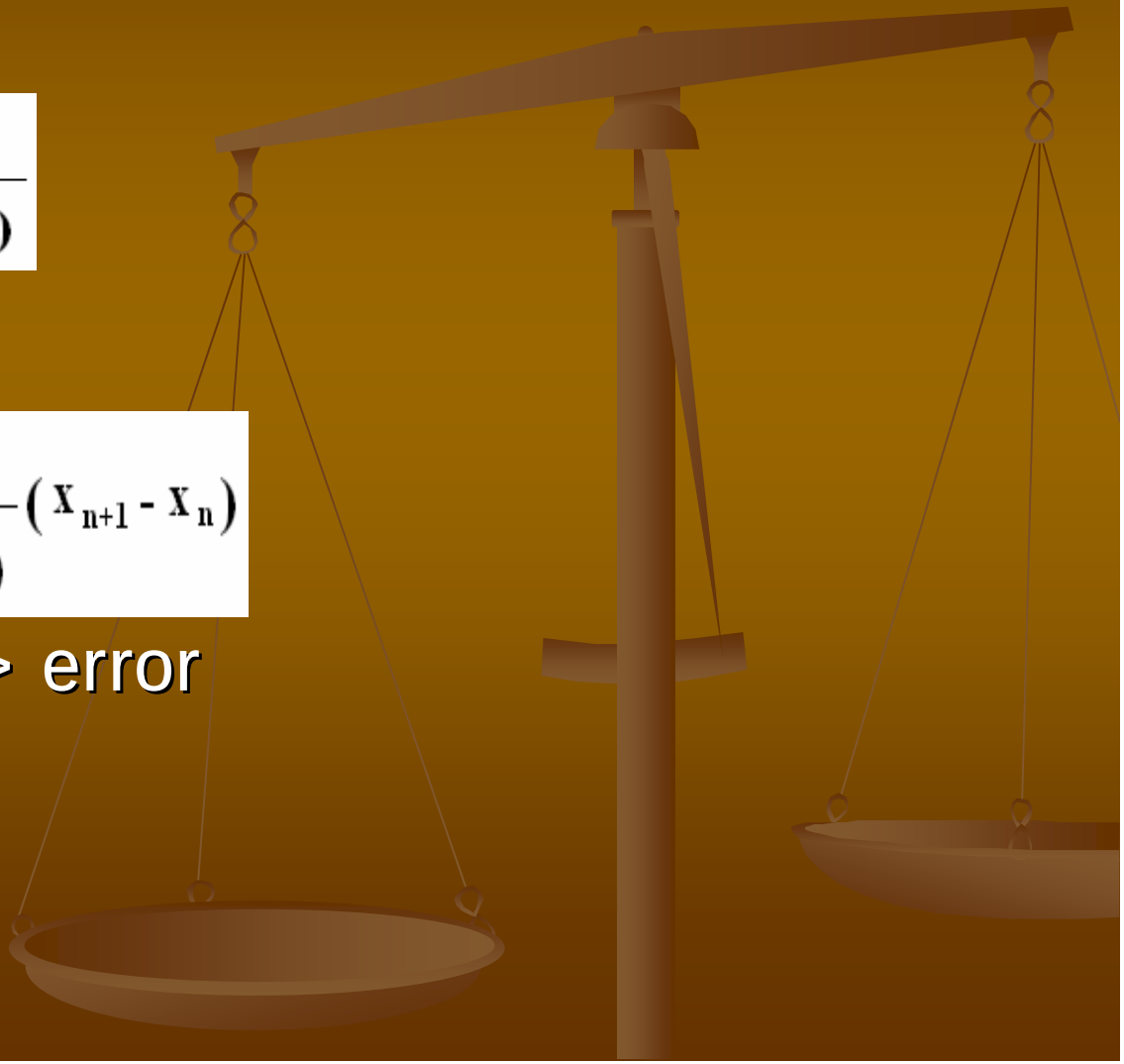
- Rumus :

$$\frac{x_{n+1} - x_*}{x_{n+1} - x_n} = \frac{f(x_{n+1})}{f(x_{n+1}) - f(x_n)}$$

dimana :

$$x_* = x_{n+1} - \frac{f(x_{n+1})}{f(x_{n+1}) - f(x_n)}(x_{n+1} - x_n)$$

dan $|X^*_{n+1} - X^*_n| >$ error



Contoh

- Hitung salah satu akar dari persamaan

$$f(x) = x^3 + x^2 - 3x - 3 = 0$$ = 0.00001?

Jawab :

I. f(1) = -4

f(2) = 3

$X_* = 2 - ((3/(3-(-4))*(2-1)) = 1.57142$

f(1.57142) = -1.36449

f(1) * f(1.57142) > 0

.: [1.57142;2]

error = | 1.57142 – 1| = 0.57142

II. X* = 2 – ((3/(3-(-1.36449))*(2-1.57142))
= 1.70540

f(1.70540) = - 0.24784

f(1.57142) * f(1.70540) > 0

.: [1.70540 ; 2]

e = | 1.70540 – 1.57142 | = 0.13398

III. X* = 2 – ((3/(3-(-0.24784))*(2-1.70540))
= 1.72788

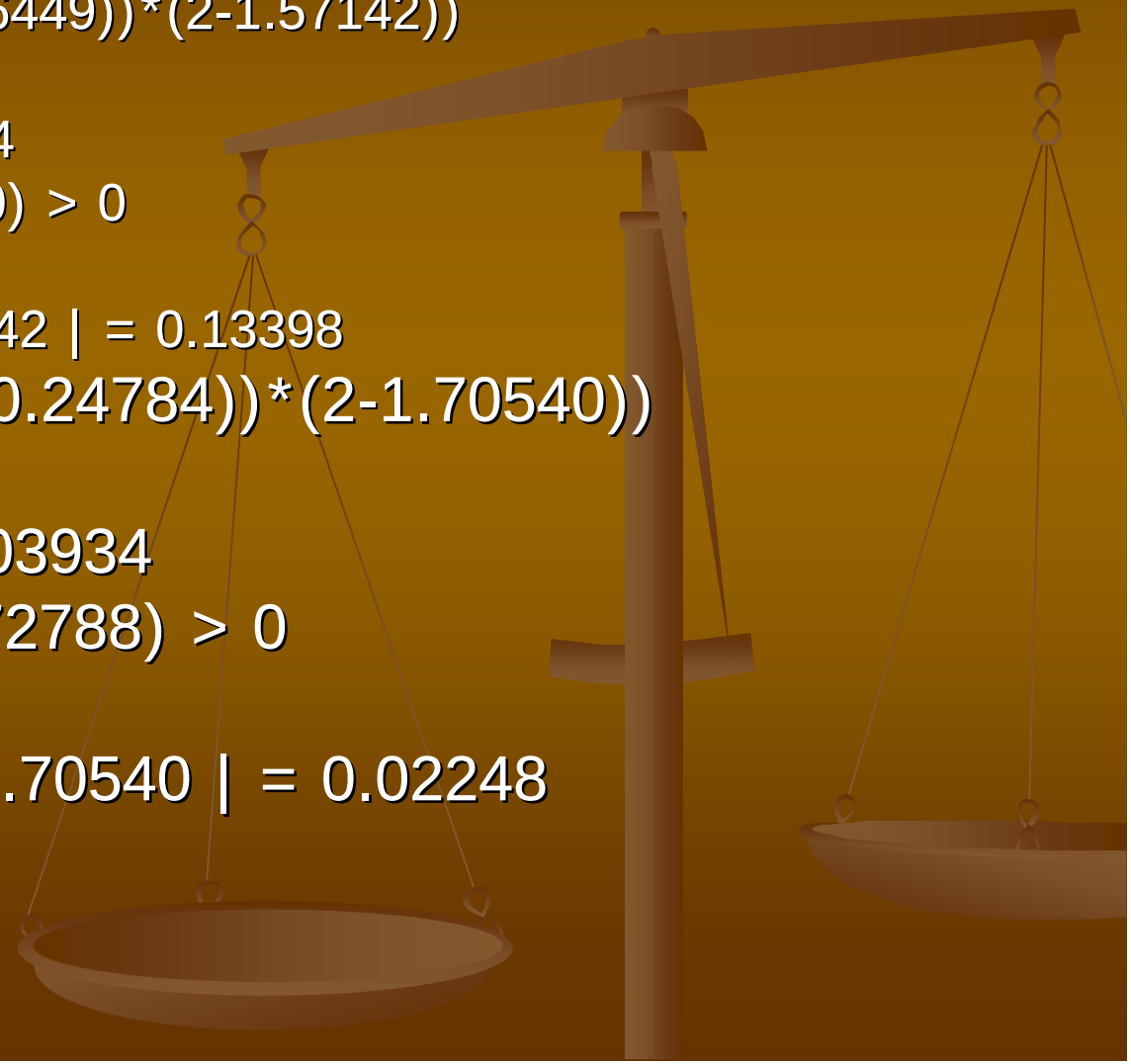
f(1.72788) = - 0.03934

f(1.70540) * f(1.72788) > 0

.: [1.72788 ; 2]

e = | 1.72788 – 1.70540 | = 0.02248

Dst.....

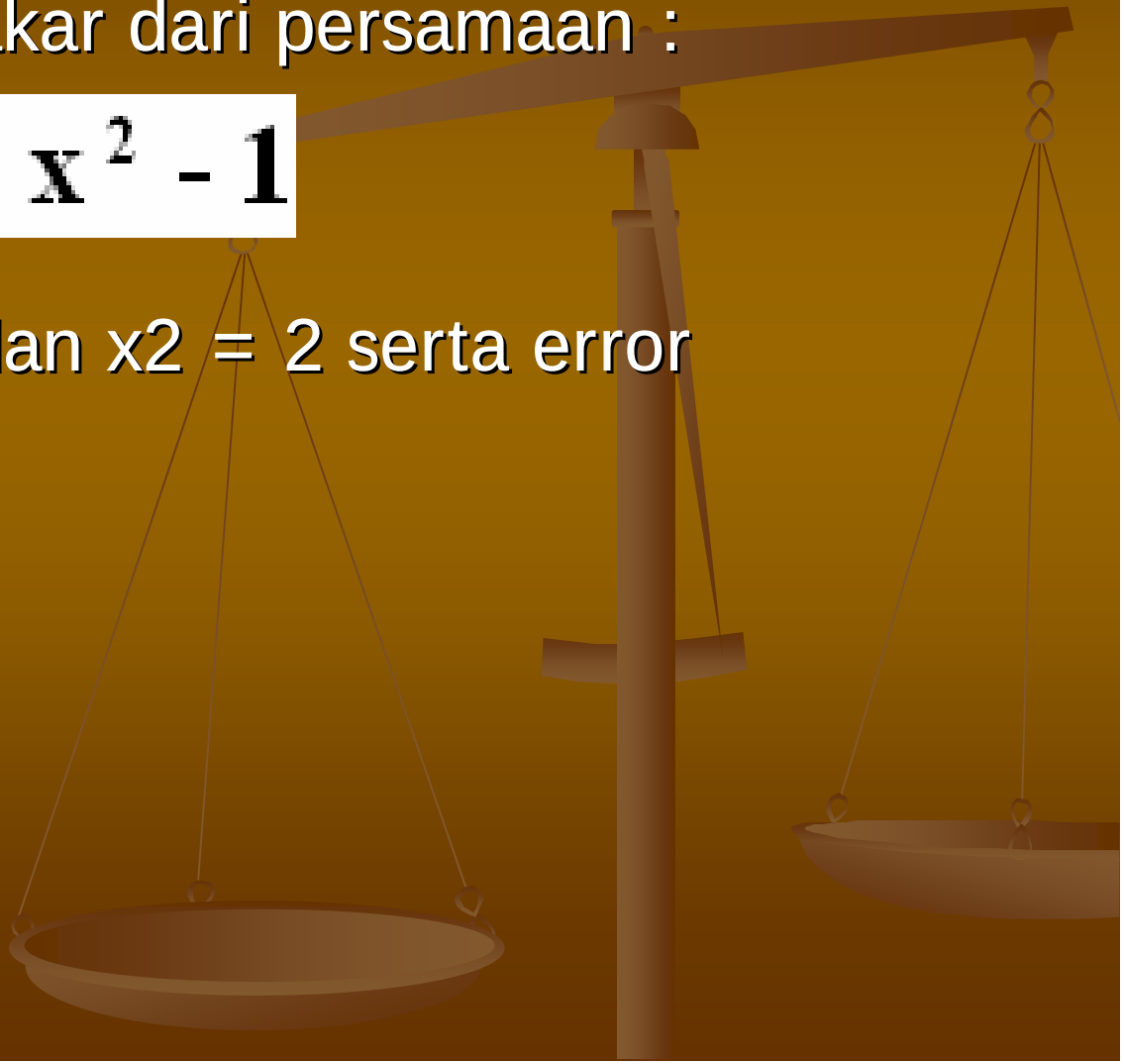


Tugas

Cari salah satu akar dari persamaan :

$$f(x) = x^3 - x^2 - 1$$

dimana x1 = 0 dan x2 = 2 serta error mendekati 0.04!



Terima Kasih