

Latihan Soal

Diketahui data-data berikut:

 $(0, -6); (2, 4); (4, 10)$ tentukan perkiraan dari $f(1)$

Penyelesaian:

| x | f(x) | Df(x) | D ² f(x) | |
|---|------|-------|---------------------|-------------------------|
| 0 | -6 | | | $\rightarrow f(x_0)$ |
| | | 10 | | $\rightarrow Df(x_0)$ |
| 2 | 4 | | -4 | $\rightarrow D^2f(x_0)$ |
| | | 6 | | |
| 4 | 10 | | | |

$h=2$
 $s = \frac{x-0}{2}$

Gregory maju

$$P_2(x) = f(x_0) + Df(x_0) \cdot s + \frac{D^2f(x_0)}{2!} s(s-1)$$

$$= -6 + 10 \left(\frac{x-0}{2} \right) + \frac{(-4)}{2} \left(\frac{x-0}{2} \right) \left(\left(\frac{x-0}{2} \right) - 1 \right)$$

$$= -6 + 5(x-0) + (-2) \left(\frac{x-0}{2} \right) \left(\left(\frac{x-0}{2} \right) - 1 \right)$$

$$f(1) \approx -6 + 5(1-0) - 2 \left(\frac{1-0}{2} \right) \left(\left(\frac{1-0}{2} \right) - 1 \right)$$

$$\approx -6 + 5 - 2 \left(\frac{1}{2} \right) \left(\left(\frac{1}{2} \right) - 1 \right)$$

$$\approx -6 + 5 - \left(1 \right) \left(-\frac{1}{2} \right)$$

$$\approx -6 + 5 - \left(-\frac{1}{2} \right)$$

$$\approx -\frac{1}{2} = -0,5$$

Gregory mundur

Penyelesaian

| x | f(x) | Df(x) | D ² f(x) |
|---|---------------------------|---------------------------|--|
| 0 | -6 | | |
| | | 10 | |
| 2 | 9 | | (-4) → D ² f(x ₂) |
| | | (6) → Df(x ₂) | |
| 4 | (10) → f(x ₂) | | |

$$h=2$$

$$s = \frac{x-4}{2}$$

$$P_2(x) = f(x_2) + Df(x_2) \cdot s + \frac{D^2f(x_2)}{2!} s(s+1)$$

$$= 10 + 6 \left(\frac{x-4}{2} \right) + (-4) \left(\frac{x-4}{2} \right) \left(\left(\frac{x-4}{2} \right) + 1 \right)$$

$$= 10 + 3(x-4) - 2 \left(\frac{x-4}{2} \right) \left(\left(\frac{x-4}{2} \right) + 1 \right)$$

$$f(1) \approx 10 + 3(1-4) - 2 \left(\frac{1-4}{2} \right) \left(\left(\frac{1-4}{2} \right) + 1 \right)$$

$$\approx 10 + 3(-3) - 2 \left(\frac{-3}{2} \right) \left(\left(\frac{-3}{2} \right) + 1 \right)$$

$$\approx 10 - 9 + \left(\frac{-3}{2} + \frac{3}{2} \right)$$

$$\approx 10 - 9 + \left(-\frac{3}{2} + \frac{3}{2} \right)$$

$$\approx 10 - 9 + \left(-\frac{3}{2} \right)$$

$$\approx 1 + \left(-\frac{3}{2} \right)$$

$$\approx \frac{2}{2} - \frac{3}{2}$$

$$\approx -\frac{1}{2} \quad 2=0.5$$