

Diketahui data ** berikut :

$(0, -6)$; $(2, 4)$; $(4, 10)$.

Tentukan perkiraan dari $f(1)$

Penyelesaian :

► Newton Gregory Maju

x	f(x)	$\Delta f(x)$	$\Delta^2 f(x)$
0	-6		
		10	
2	4		-4
		6	
4	10		

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

$$p_2(x) \approx f(x_0) + \Delta f(x_0) \cdot s + \frac{\Delta^2 f(x_0)}{2!} \cdot s(s-1)$$

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

$$f(x) = p_2(x) \approx (-6) + 5(x) - 2 \left(\frac{x}{2}\right) \left(\frac{x}{2} - 1\right)$$

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

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

$$\approx -1 + \frac{1}{2}$$

$$\approx -\frac{1}{2}$$

1) Newton Gregory Mundur

x	f(x)	$\nabla f(x)$	$\nabla^2 f(x)$
0	-6		
2	4	10	
4	10	6	-4

$$h = 2$$

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

$$p_2(x) \approx f(x_2) + \nabla f(x_2) \cdot s + \frac{\nabla^2 f(x_2)}{2!} \cdot s(s+1)$$

$$f(x) \approx p_2(x) \approx 10 + 6 \cdot \left(\frac{x-4}{2}\right) + \frac{(-4)}{2!} \cdot \left(\frac{x-4}{2}\right) \left(\frac{x-4}{2} + 1\right)$$

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

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

$$= 10 - 9 - \frac{3}{2}$$

$$\approx 1 - \frac{3}{2}$$

$$\approx -\frac{1}{2} //$$