

$$x_{i+1} = \begin{cases} x_i + \frac{1}{2} \frac{f(x_i)}{f'(x_i)} & \text{if } f'(x_i) \neq 0 \\ x_i + \frac{1}{2} \frac{f(x_i)}{f'(x_{i-1})} & \text{if } f'(x_i) = 0 \end{cases}$$