4b

$$N_2(h/9) = \frac{9}{16}\left[\frac{3f(x_0+h) - 3f(x)}{h} - \frac{3f(x_0+h/3) - 3f(x_0)}{h} - \cdots\right.$$

$$\left.\cdots - \frac{9f(x_0+h/3) - 9f(x_0)}{h} + \frac{9f(x_0+h/9) - 9f(x_0)}{h}\right]$$

$$= \frac{27}{16h}\left[f(x_0+h) - f(x) - f(x_0+h/3) + f(x_0) - \cdots\right.$$

$$\left.\cdots - 3f(x_0+h/3) + 3f(x_0) + 3f(x_0+h/9) - 3f(x_0)\right]$$

$$= \frac{27}{16h}\left[f(x_0+h) - 4f(x_0+h/3) + 3f(x_0+h/9)\right]$$

$$\frac{df(x_0)}{dx} = \boxed{\frac{27}{16h}\left(f(x_0+h) - 4f(x_0+h/3) + 3f(x_0+h/9)\right) + O(h^3)}$$