

2.1.83

Exercise 2.1, 83 - Find the difference quotient $\frac{f(x+h) - f(x)}{h}$, where $h \neq 0$, for $f(x) = 4x + 3$.

Solution

Well,

$$\frac{f(x+h) - f(x)}{h} = \frac{(4(x+h) + 3) - (4x + 3)}{h}$$

$$= \frac{4x + 4h + 3 - 4x - 3}{h}$$

$$= \frac{4h}{h}$$

$$= \boxed{4} \text{ since } h \neq 0. \quad \square$$