

Chapter 1: Functions

Worksheet to accompany

David Feldman, *Chaos and Fractals: An Elementary Introduction*,
Oxford University Press, 2012

March 30, 2026

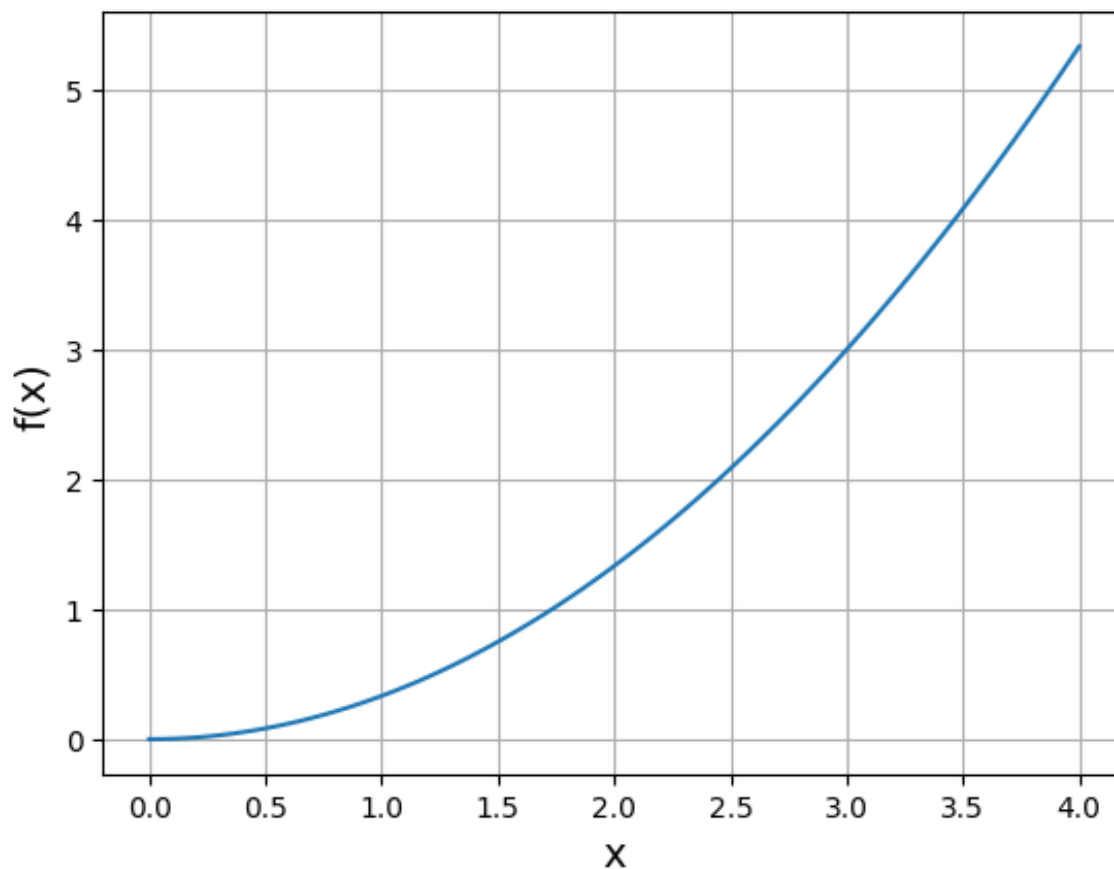


Figure 1: The function $f(x)$.

1. The following problems refer to the function $f(x)$, shown in Fig. 1. Determine approximate values for the following:
 - (a) $f(3)$
 - (b) $f(2)$
 - (c) $f(1)$
 - (d) $f(f(2))$
 - (e) $f(f(3))$

2. Let $g(x) = x^2 + 3$. Determine values for the following:

- (a) $g(0)$
- (b) $g(2)$
- (c) $g(-2)$
- (d) $g(z)$
- (e) $g(\heartsuit)$
- (f) $g(\text{👉})$
- (g) $g(g(x))$

3. Let h be a function that takes a number, triples it, and then adds 6.

(a) Calculate the following:

- i. $h(1)$
- ii. $h(0)$
- iii. $h(-1)$
- iv. $h(-5)$

(b) Is there any number that does not change after it is “h-ed”? If so, what are some methods you might use to figure find this number?

4. Let β be a function¹ that takes a number and reverses its digits. For example, $\beta(24) = 42$. Determine the following:

- (a) $\beta(128)$
- (b) $\beta(13)$
- (c) $\beta(\beta(13))$
- (d) $\beta(131)$

¹The symbol β is the Greek letter ‘beta’. It’s kinda like a Latin ‘b’. I chose it because backwards starts with a b, and also I think β s are sort fun to write.