# ProofSpace Comprehension Quiz

## Functions

## Introduction

**1**  Let $f : \mathbb{Z} \to \mathbb{Z}$ be given by $f(x) = x^2$.

a) What is the domain of the function?

b) What is the codomain of the function?

c) What is the range of the function?

d) What is $f(4)$?

e) What is $f[\{-2, 4\}]$?

f) What is $f^{-1}[\{1\}]$?

g) What is $f^{-1}[\{1, -1\}]$?

h) What is $f^{-1}[\{1, 2, 3\}]$?

**2**  Let $f : \mathbb{N} \to \mathbb{Z}$ be given by $f(x) = x^2 - 1$.

a) What is the domain of the function?

b) What is the codomain of the function?

c) What is the range of the function?

d) What is $f(4)$?

e) What is $f[\{3, 4\}]$?

f) What is $f^{-1}[\{1\}]$?

g) What is $f^{-1}[\{1, -1\}]$?

h) What is $f^{-1}[\{1, 2, 3\}]$?