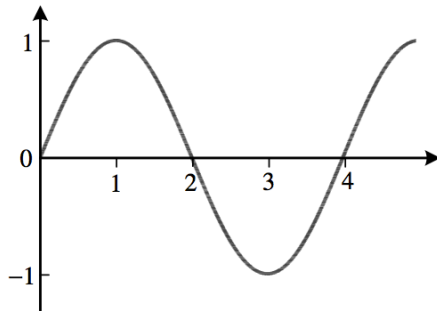




## Functions Revision Questions

### 2. Types of functions

e.g. The curve shown below represents part of a function  $f : \mathbb{R} \rightarrow \mathbb{R}$ . The shape of the curve continues as shown in both directions.



- Use the diagram to explain if  $f$  is injective.
- State the range of the function, and use it to explain if  $f$  is surjective.
- If we restrict the domain to  $[1,3]$  and the codomain to  $[-1,1]$ , explain why the curve now represents a bijective function.

### 3. Composite functions

e.g.  $f : x \rightarrow (x-1)^2$  and  $g : x \rightarrow 3x+1$  are two functions defined for all  $x \in \mathbb{R}$ .

- Investigate if  $g \circ f(x) = f \circ g(x)$ , for all  $x \in \mathbb{R}$ .
- Express  $g^2(x)$  in terms of  $x$ .

## Functions Revision Questions

### 4. Inverse functions

e.g.  $f$  is the function  $f : x \rightarrow \frac{5x-2}{2x+3}$ .

(i) Find  $f^{-1}(x)$ .

(ii) Verify that  $f^{-1} \circ f(x) = x$ .