

BC Calc HW 1 – Functions

Name _____

Date _____

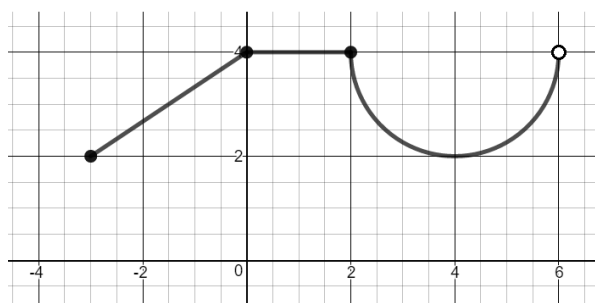
1. For each of the functions below, express the domain and range as sets of real numbers.

Example:

The function $a(x) = 2 + \sqrt{x-5}$ has domain $D = \{x \in \mathbb{R} \mid x \geq 5\}$ and range $R = \{y \in \mathbb{R} \mid y \geq 2\}$

$f(x) = 2x + 1$	$g(x) = x^2 - 3$	$h(x) = \frac{1}{2-x}$	$j(x) = \frac{1}{2} \sin(2x) + 3$
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2. Consider the graph $y = f(x)$ below:



a. Explain how you know this is the graph of a function.

b. State the domain and range of $f(x)$.

c. Prove that this function is non-invertible by showing there exists two inputs that map to the same output.

3. Consider the example in problem 1 above. Suppose the range of $a(x)$ were expressed as $R = \{x \in \mathbb{R} \mid x \geq 2\}$. Why might someone object to this? Why might someone argue that this is perfectly acceptable?