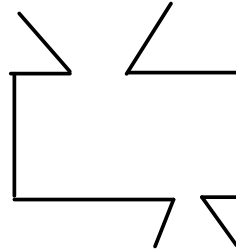


Domain and Range

We often visualize a function as a machine. This machine takes input and produces output, based on some rule. The "rule" is usually defined by an equation.



The **domain** is the set of numbers that we can use as input.

The **range** is the set of numbers that we can get as output. (Depends on domain)

First we will discuss some new mathematical symbols useful for describing the domain and range of a function. These symbols are used to describe "sets".

What do the following symbols mean?

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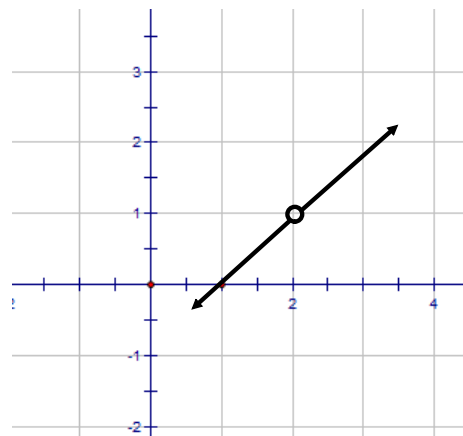
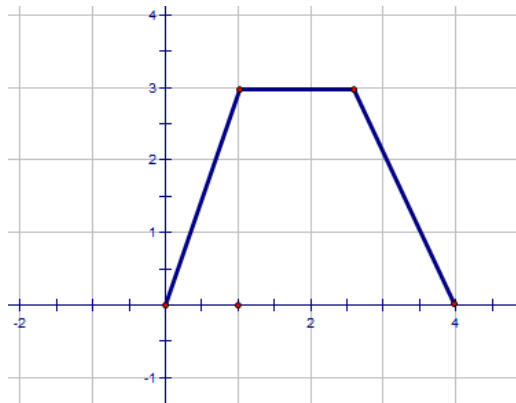
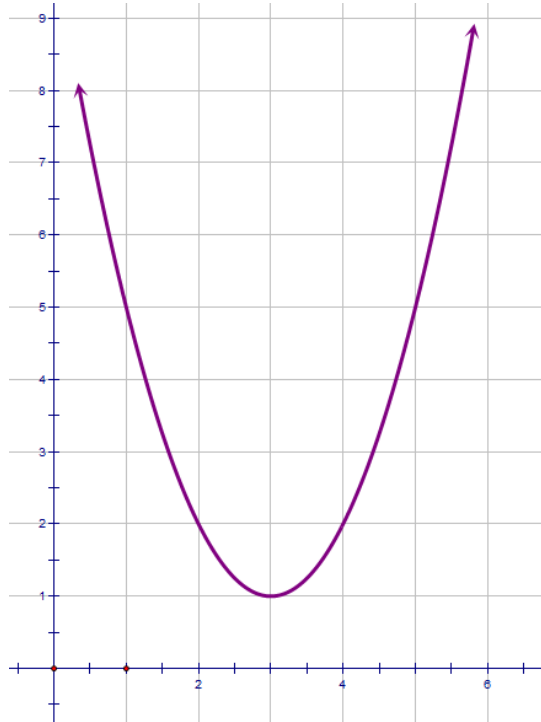
$x \leq 7$

$x > 8$

\neq

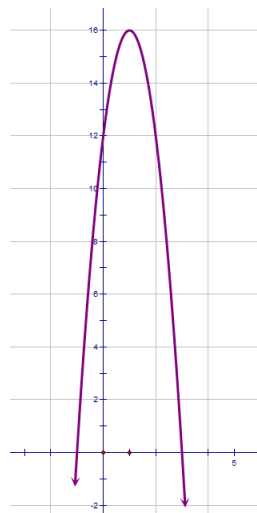
$3 \leq x \leq 5$

Find the domain and range of each function given its graph below.



A dirt bike goes over a large ramp. The height of the bike is given by the quadratic function $h(t) = -4t^2 + 8t + 12$, where $h(t)$ is the height (in feet) t seconds after leaving the end of the ramp.

The graph of this function is shown below (generated from graphing software). Suggest a domain and range for this function.

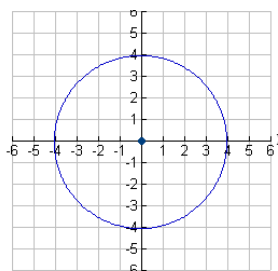


Note: We can do this question without the graph! (learn this later)

Find the domain of and range for each relationship below.

$\{(1, 7), (2, 5), (3, 9), (4, 5)\}$

Year	Median Income
1998	\$56800
2003	\$61300
2007	\$59800
2009	\$61700



$$f(x) = 2(x - 4)^2 + 5$$