Domain and Range

The **domain** of a graph is the set of all x-values for which the graph is defined (or exists).

To figure out where the graph is not defined:

Find where the denominator equals zero.

Find where the radicand is less than zero.

The **range** of a graph is the set of all y-values for which the graph is defined (or exists).

Three Ways to Write Domain and Range:
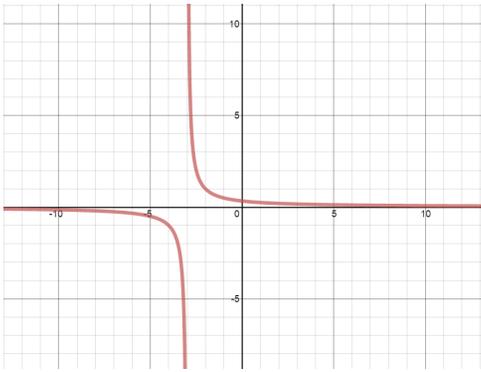
Interval Notation
   $(-\infty, 5) \cup (5, \infty)$
Algebraic Notation
   $-\infty < x < 5$ and $5 < x < \infty$
Set Notation
   $\{x: x \neq 5\}$ (or $\{x| \ x \neq 5\}$

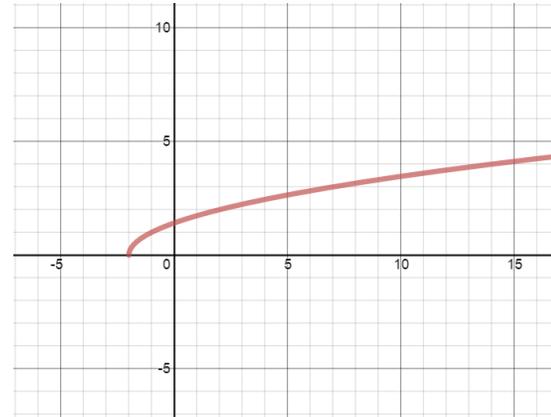$$f(x) = \frac{1}{x + 3}$$

Domain: Range:

$$f(x) = \sqrt{2 + x}$$
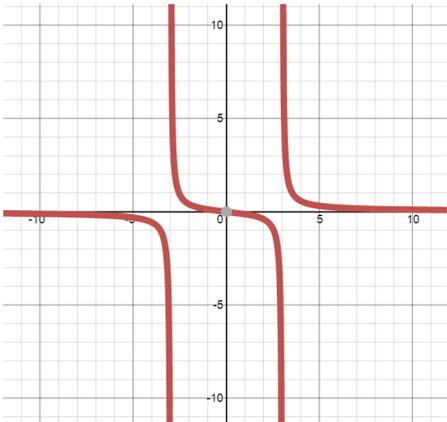

Domain: Range:

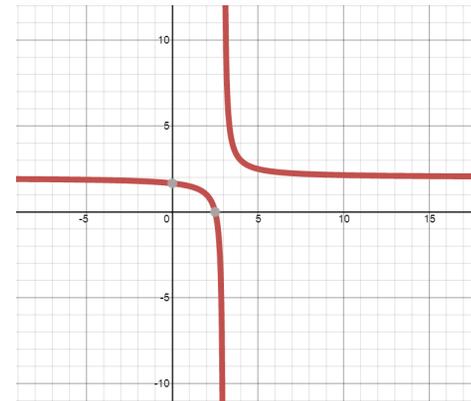$$f(x) = \frac{x}{x^2 - 9}$$

Domain: Range:

$$f(x) = \frac{1}{x - 3} + 2$$

Domain: Range: