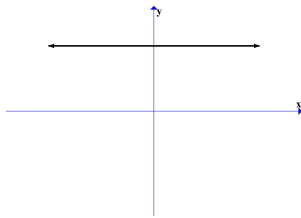# 3.4A Library of Functions

▼ Library of Functions

Basic functions represent a collection of functions that have similar graphs.

▼ Types of Basic Functions
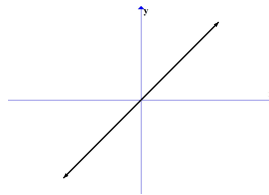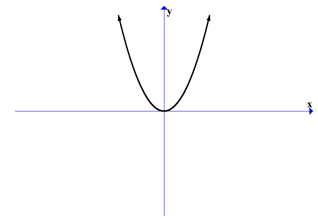
Constant:

$$f(x) = c$$
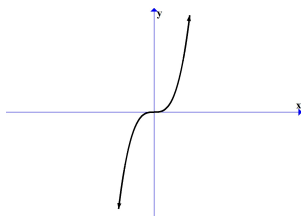
Identity:

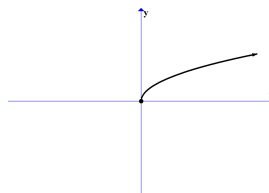$$f(x) = x$$

Square:

$$f(x) = x^2$$
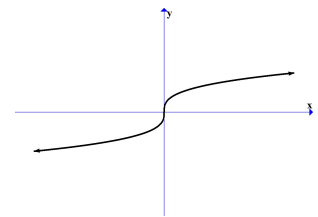
Cube:

$$f(x) = x^3$$
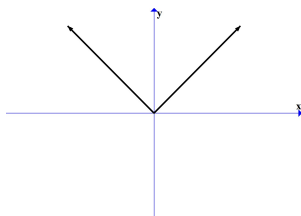
Square Root:

$$f(x) = \sqrt{x}$$
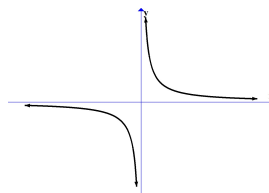
Cube Root:

$$f(x) = \sqrt[3]{x}$$

Absolute Value:

$$f(x) = |x|$$

Reciprocal:

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

Reciprocal Squared:

$$f(x) = \frac{1}{x^2}$$
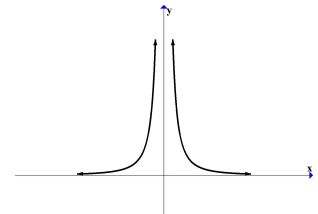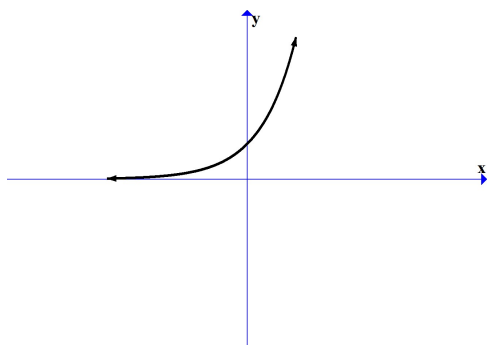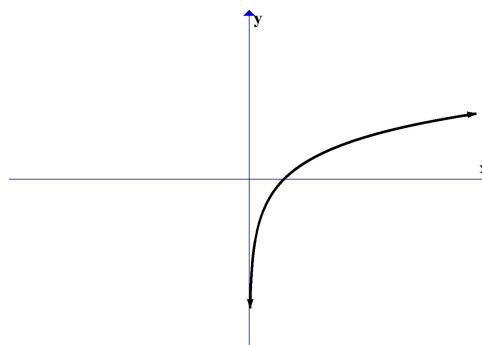
Exponential Base e:

$$f(x) = e^x$$

Logarithmic Base e:

$$f(x) = \ln x$$

▼ Examples

    ▼ Example 1: Study the function $f(x) = x^2$

Equation: _____

Function notation: _____

Domain: _____

Range: _____

Interval(s) of Increase: _____

Interval(s) of Decrease: _____

Interval(s) of Constant: _____

Even or Odd or Neither

Relative Minimum: _____

Relative Maximum: _____

X | Y

▼ Example 2: Study the function $f(x) = \sqrt{x}$

Equation: _____

Function notation: _____

Domain: _____

Range: _____

Interval(s) of Increase: _____

Interval(s) of Decrease: _____

Interval(s) of Constant: _____

Even or Odd or Neither

Relative Minimum: _____

Relative Maximum: _____

X	Y

▼ Example 3: Study the function $f(x) = \sqrt[3]{x}$

Equation: _____

Function
notation: _____

Domain: _____

Range: _____

Interval(s) of
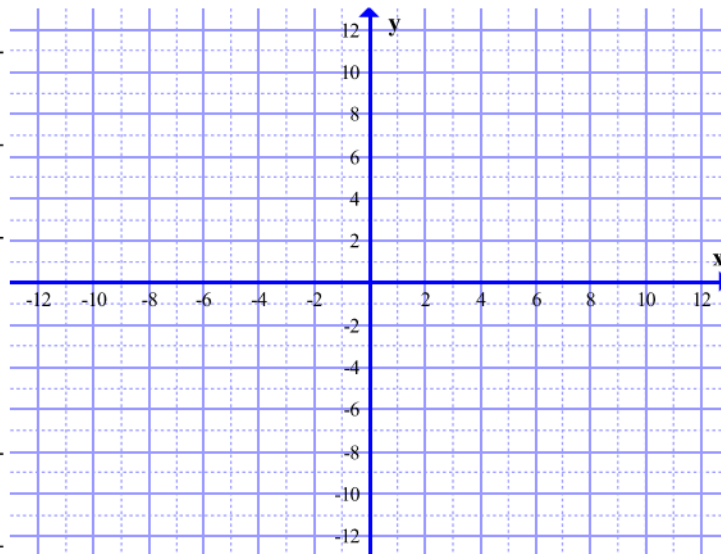Increase: _____

Interval(s) of
Decrease: _____

Interval(s) of
Constant: _____

Even or Odd
or Neither

Relative
Minimum: _____

Relative
Maximum: _____

X	Y

▼ Example 4: Study the function $f(x) = \frac{1}{x}$

Equation: _____

Function
notation: _____

Domain: _____

Range: _____

Interval(s) of
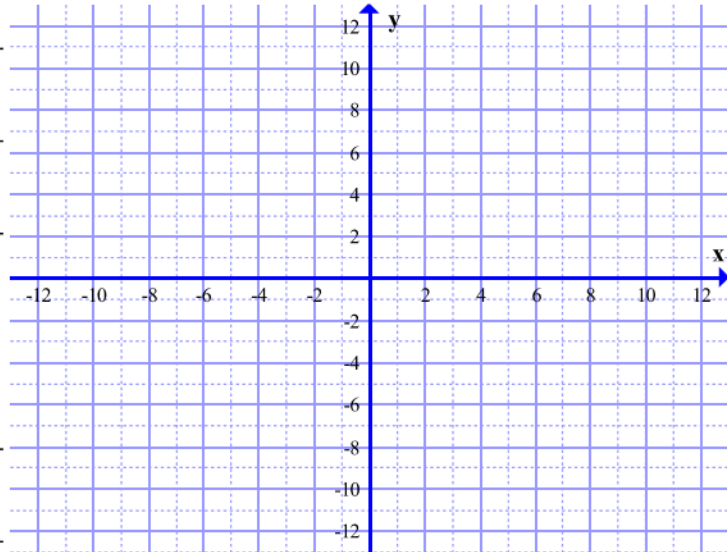Increase: _____

Interval(s) of
Decrease: _____

Interval(s) of
Constant: _____

Even or Odd
or Neither

Relative
Minimum: _____

Relative
Maximum: _____

X	Y