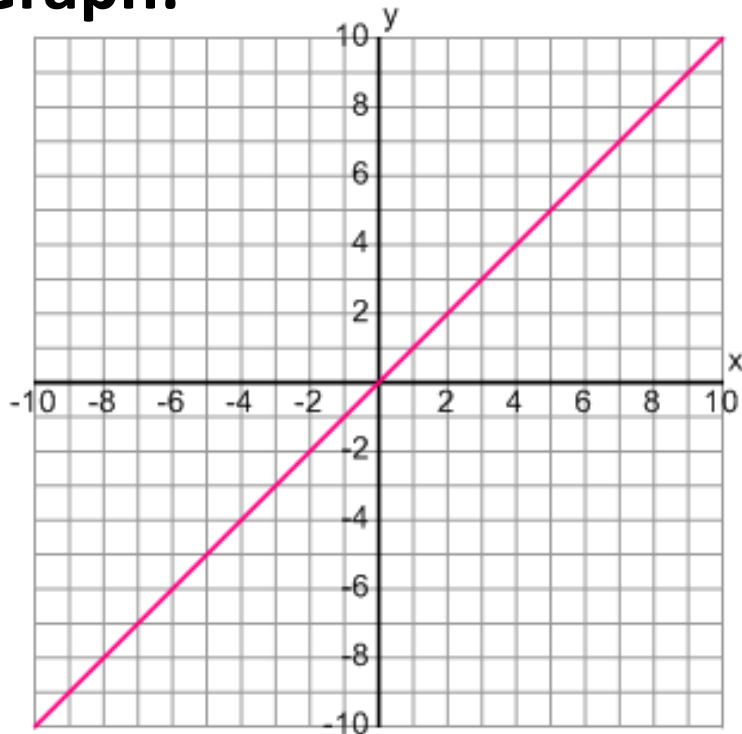


Parent Function Notes

Linear Function

Equation: $f(x) = x$

Graph:



Domain

$$x | x \in \square$$

$$(-\infty, \infty)$$

Range

$$y | y \in \square$$

$$(-\infty, \infty)$$

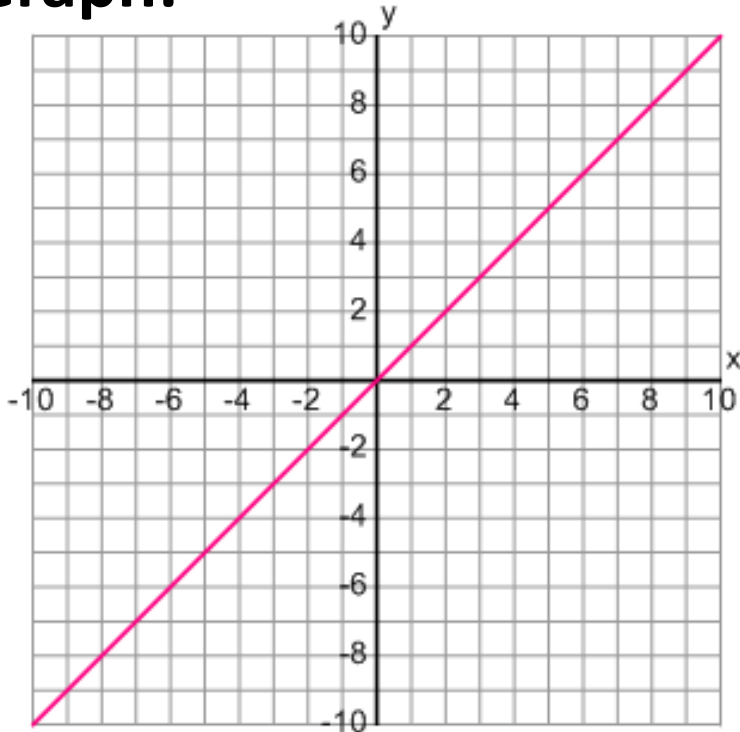
Continuity

yes

Linear Function

Equation: $f(x) = x$

Graph:



Increasing

$(-\infty, \infty)$

Decreasing

None

Minimum

None

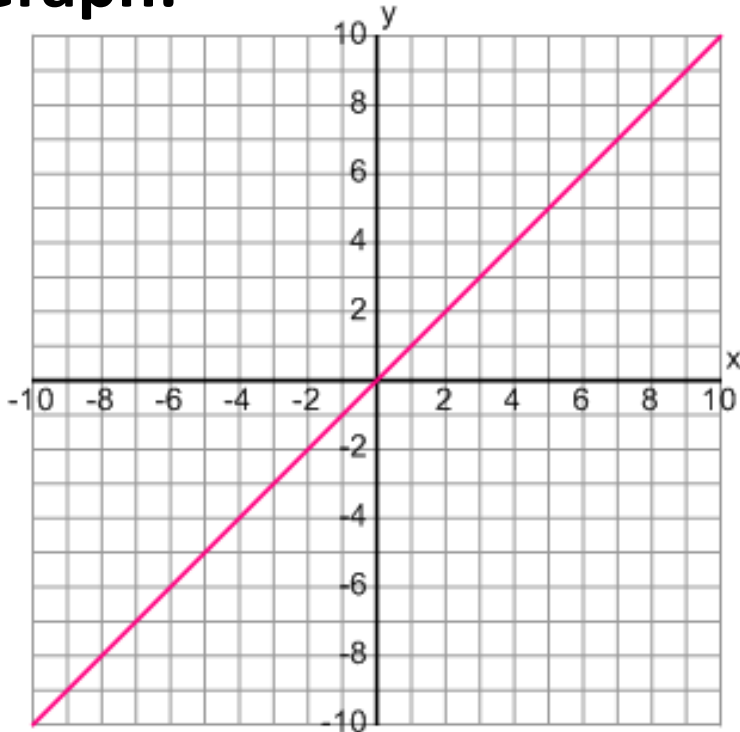
Maximum

None

Linear Function

Equation: $f(x) = x$

Graph:



Even/Odd/Neither

Odd

End Behavior

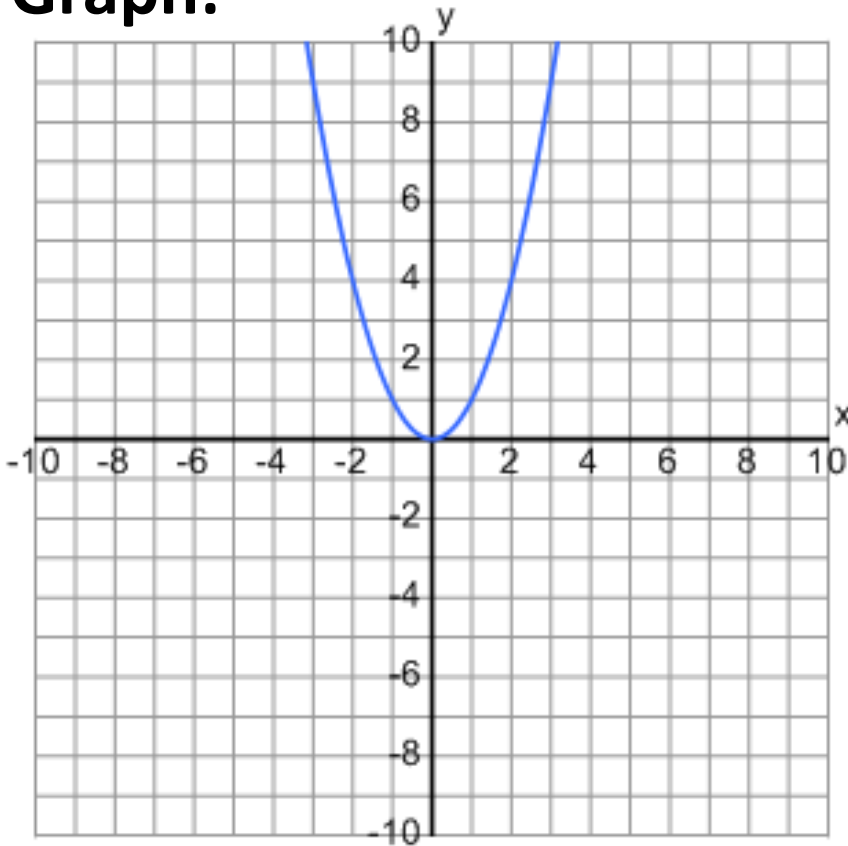
$$\lim_{x \rightarrow -\infty} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Quadratic Function

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

Graph:



Domain

$$x | x \in \square$$

$$(-\infty, \infty)$$

Range

$$y | y \geq 0$$

$$[0, \infty)$$

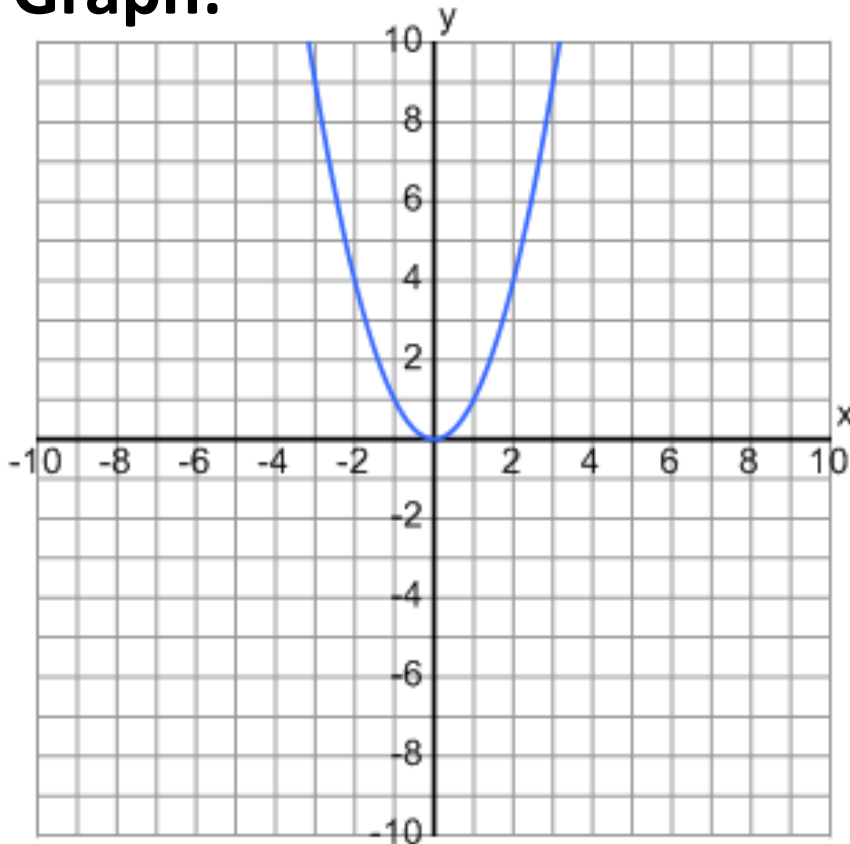
Continuity

yes

Quadratic Function

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

Graph:



Increasing

$(0, \infty)$

Decreasing

$(-\infty, 0)$

Minimum

$(0, 0)$

Maximum

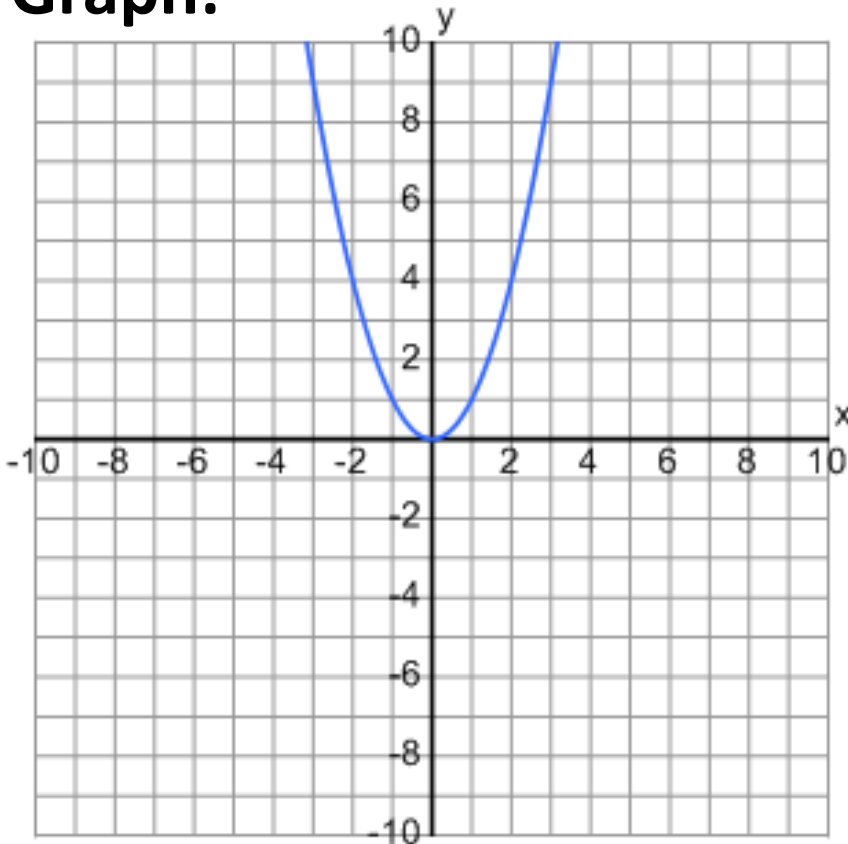
None

Quadratic Function

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

Even/Odd/Neither

Graph:



Even

End Behavior

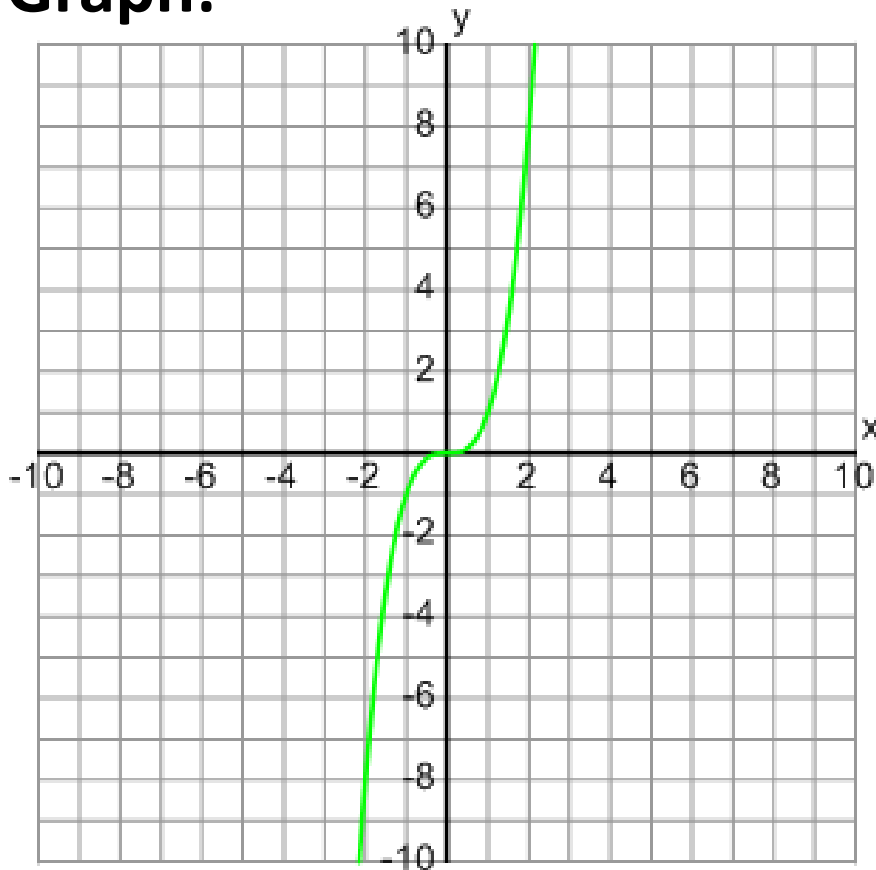
$$\lim_{x \rightarrow -\infty} f(x) = \infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Cubic Function

Equation: $f(x) = x^3$

Graph:



Domain

$$x | x \in \square$$

$$(-\infty, \infty)$$

Range

$$y | y \in \square$$

$$(-\infty, \infty)$$

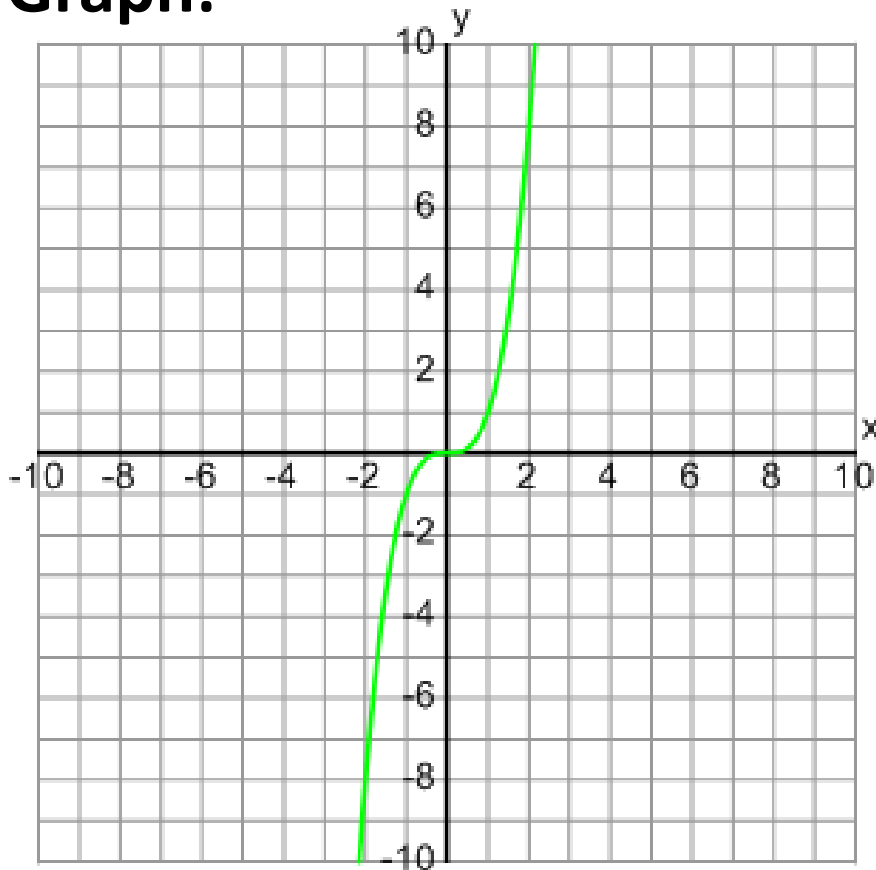
Continuity

yes

Cubic Function

Equation: $f(x) = x^3$

Graph:



Increasing

$(-\infty, \infty)$

Decreasing

None

Minimum

None

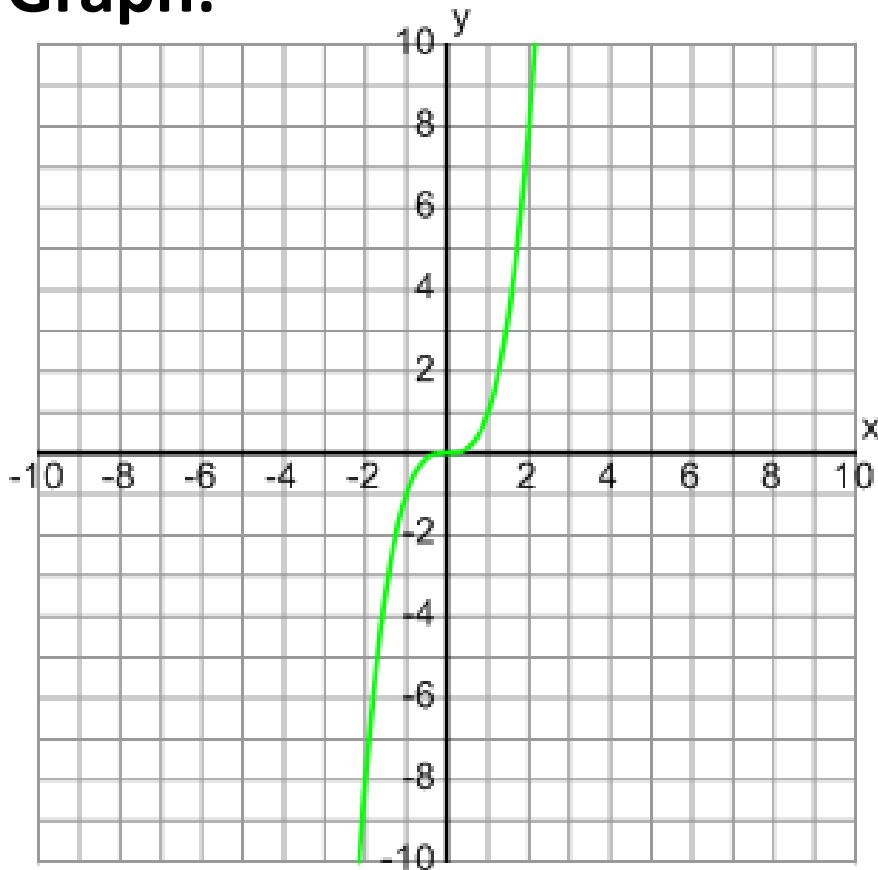
Maximum

None

Cubic Function

Equation: $f(x) = x^3$

Graph:



Even/Odd/Neither

Odd

End Behavior

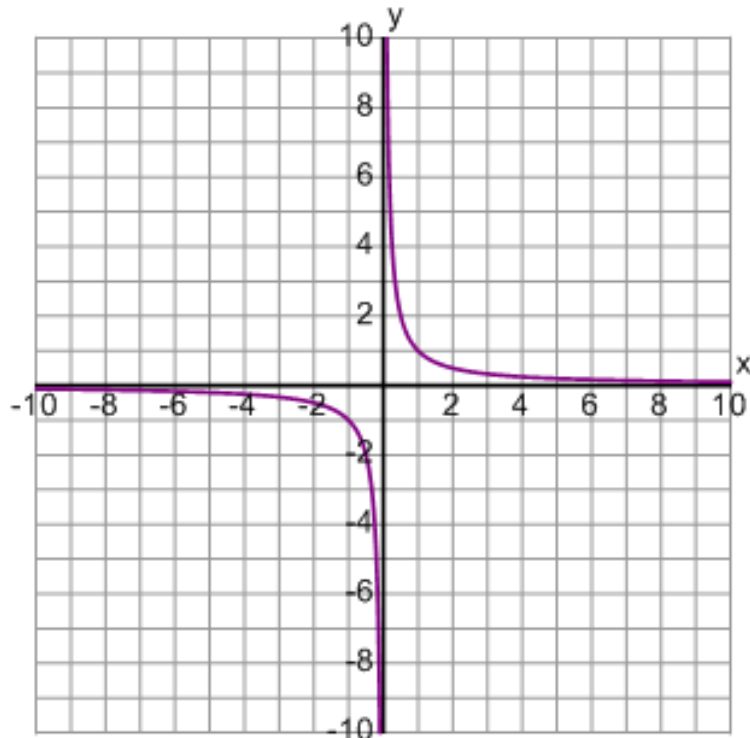
$$\lim_{x \rightarrow -\infty} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Rational Function

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

Graph:



Domain

Range

$$x | x \in \mathbb{R}, x \neq 0 \quad y | y \in \mathbb{R}, y \neq 0$$

$$(-\infty, 0) \cup (0, \infty) \quad (-\infty, 0) \cup (0, \infty)$$

Continuity

no

Rational Function

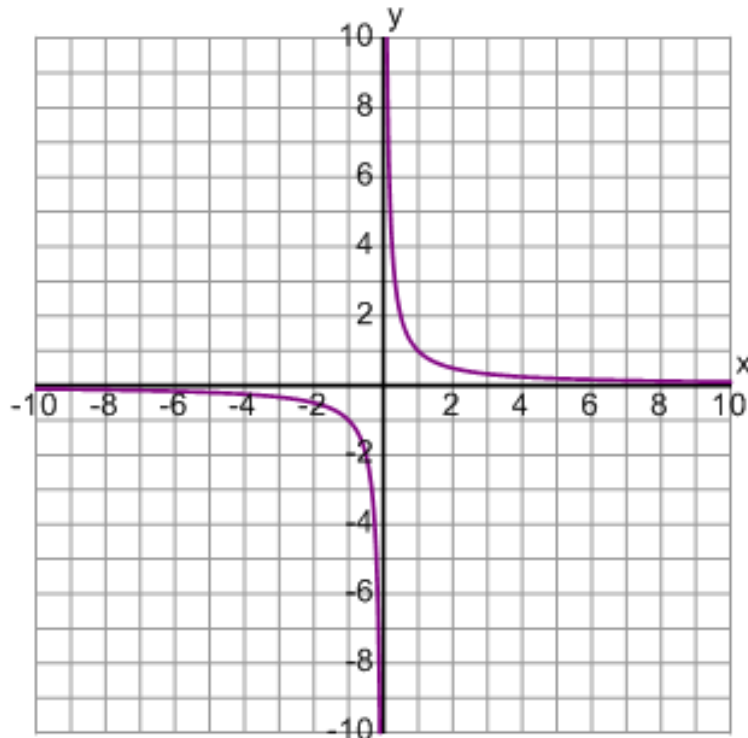
Equation: $f(x) = \frac{1}{x}$

Increasing

Decreasing

None

$(-\infty, 0) \cup (0, \infty)$



Minimum

Maximum

None

None

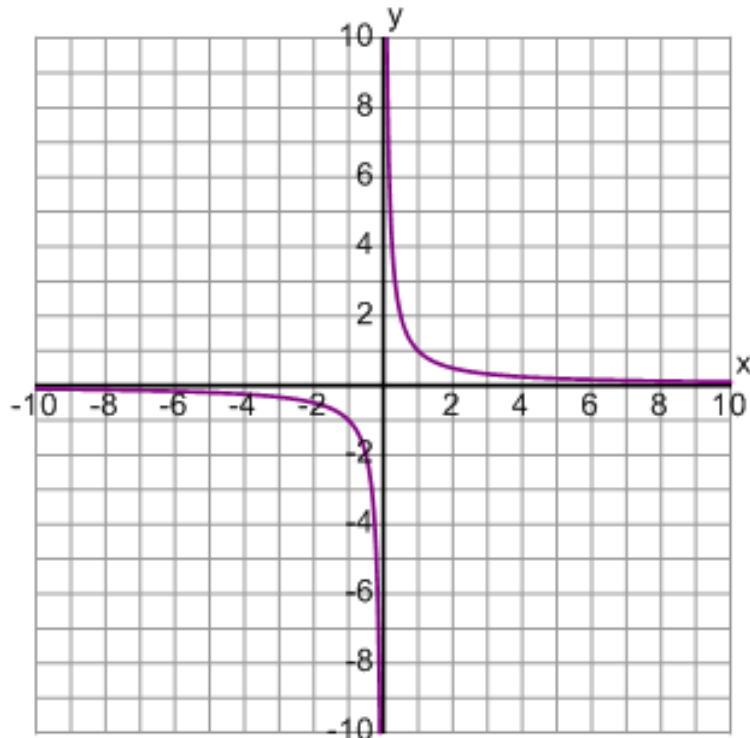
Rational Function

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

Graph:

Even/Odd/Neither

Odd



End Behavior

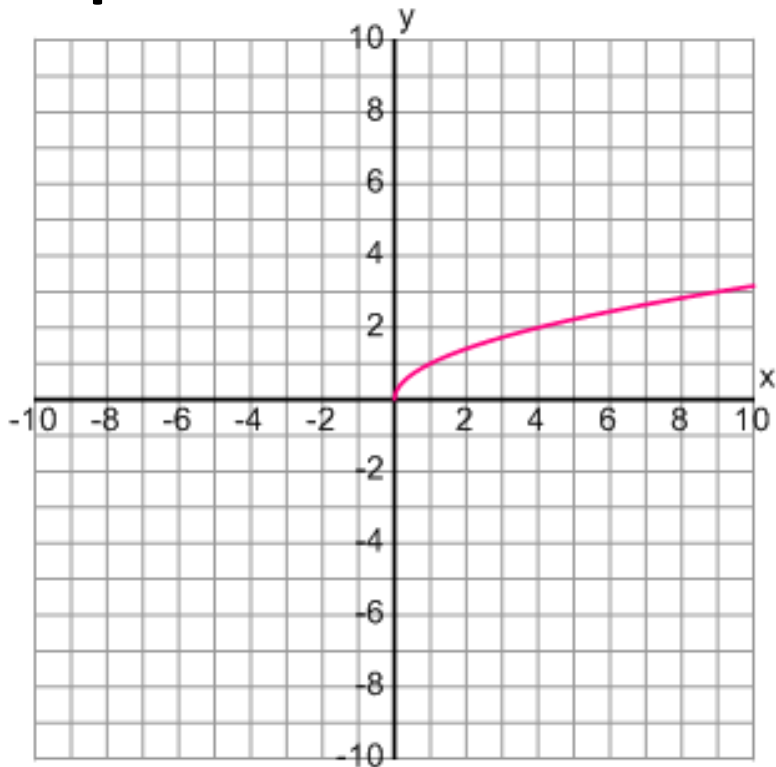
$$\lim_{x \rightarrow -\infty} f(x) = 0$$

$$\lim_{x \rightarrow \infty} f(x) = 0$$

Square Root Function

Equation: $f(x) = \sqrt{x}$

Graph:



Domain

$$x | x \geq 0$$

$$[0, \infty)$$

Range

$$y | y \geq 0$$

$$[0, \infty)$$

Continuity

yes

Square Root Function

Equation: $f(x) = \sqrt{x}$

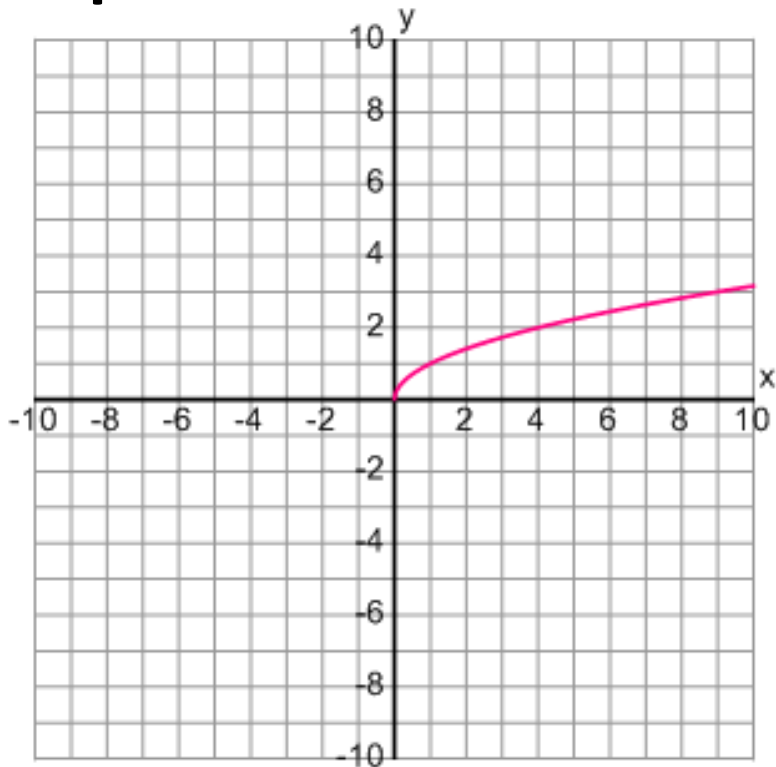
Increasing

Decreasing

Graph:

$(0, \infty)$

None



Minimum

Maximum

$(0, 0)$

None

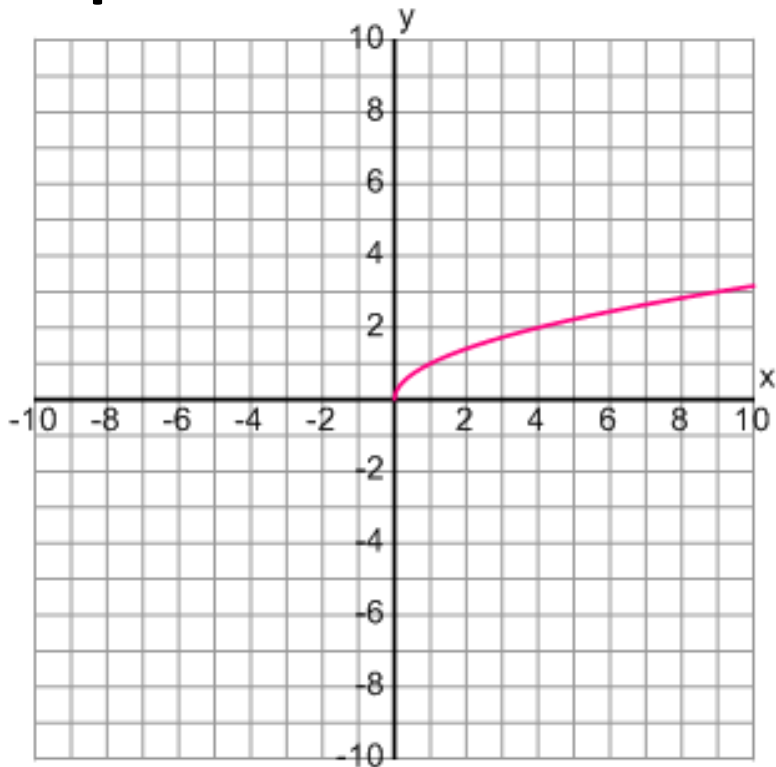
Square Root Function

Equation: $f(x) = \sqrt{x}$

Even/Odd/Neither

Neither

Graph:



End Behavior

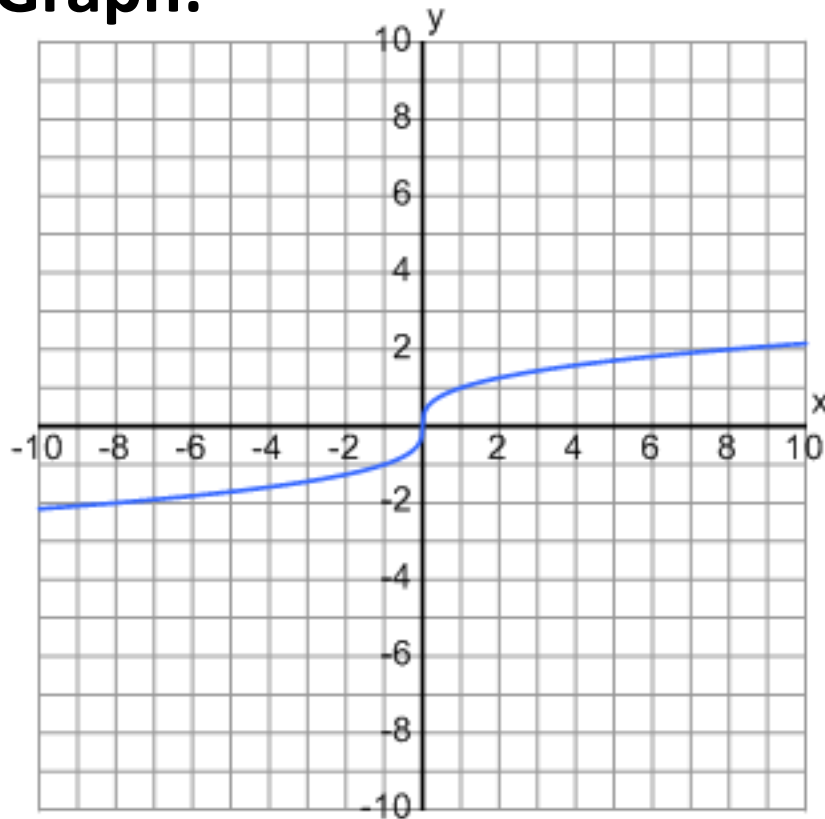
$$\lim_{x \rightarrow -\infty} f(x) = \text{N/A}$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Cube Root Function

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

Graph:



Domain

$$x | x \in \square$$

$$(-\infty, \infty)$$

Range

$$y | y \in \square$$

$$(-\infty, \infty)$$

Continuity

yes

Cube Root Function

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

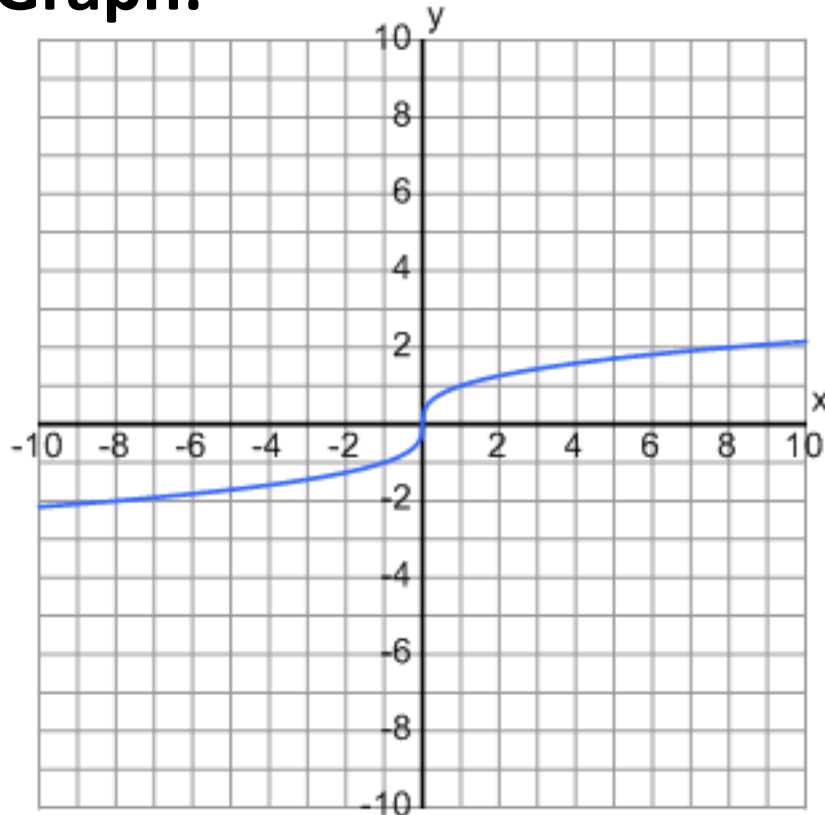
Increasing

Decreasing

$(-\infty, \infty)$

None

Graph:



Minimum

Maximum

None

None

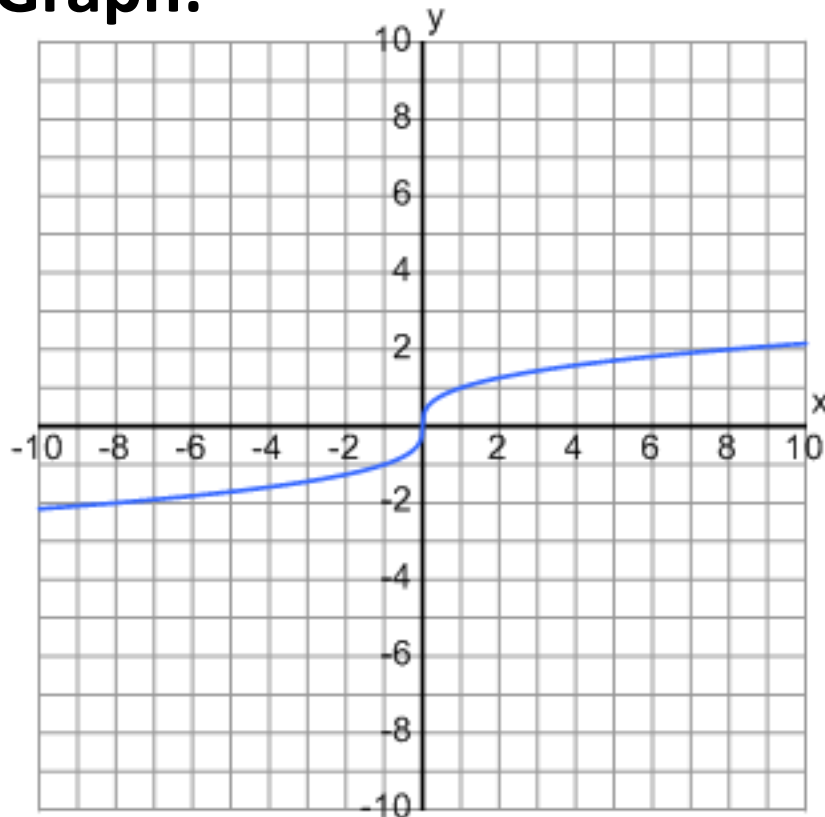
Cube Root Function

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

Even/Odd/Neither

Odd

Graph:



End Behavior

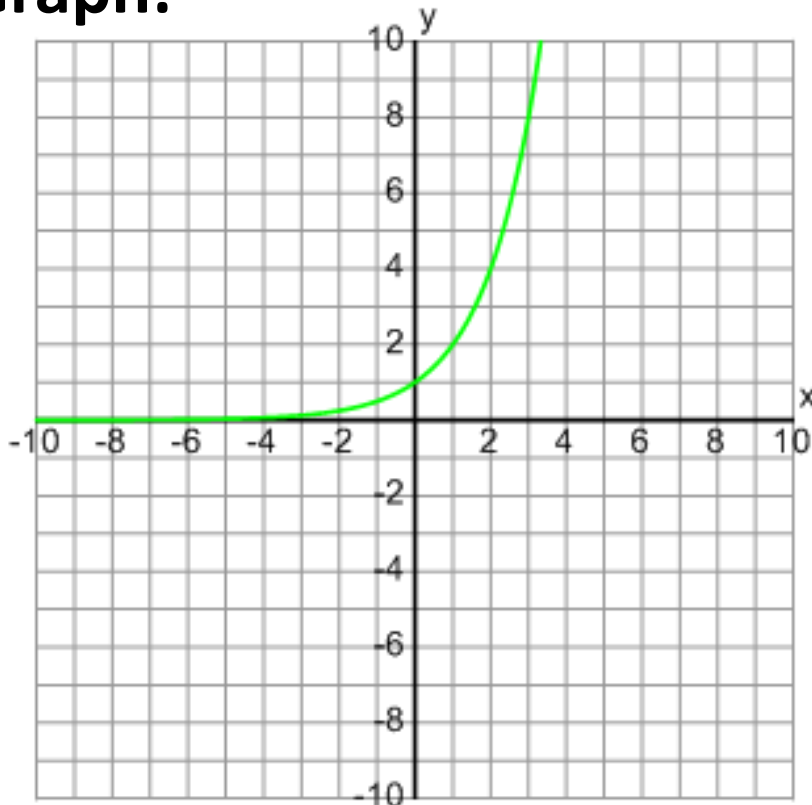
$$\lim_{x \rightarrow -\infty} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Exponential Function

Equation: $f(x) = a^x$

Graph:



Domain

$$x | x \in \mathbb{R}$$

$$(-\infty, \infty)$$

Range

$$y | y > 0$$

$$(0, \infty)$$

Continuity

yes

Exponential Function

Equation: $f(x) = a^x$

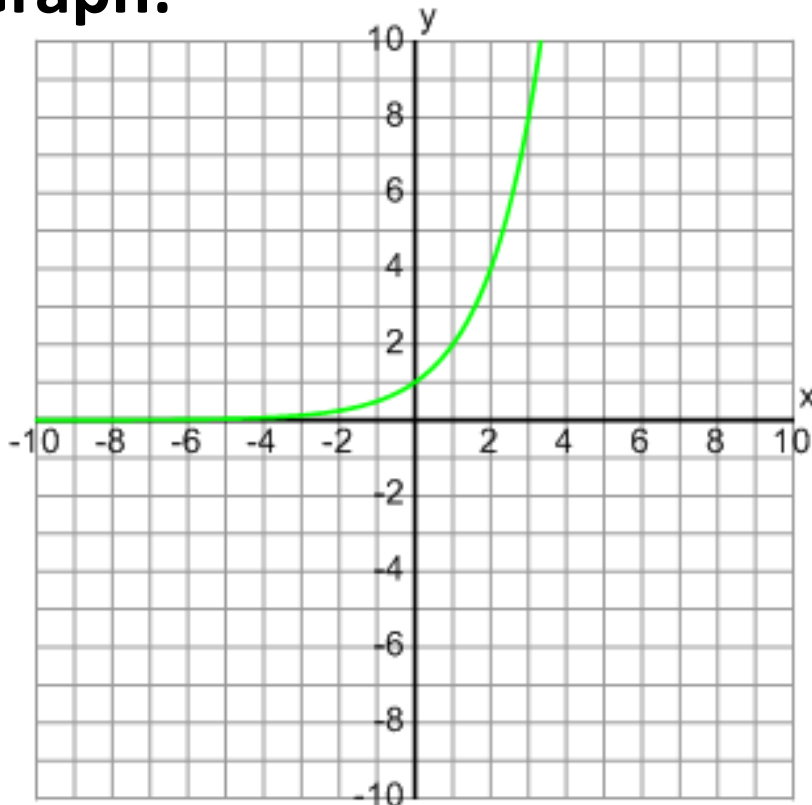
Increasing

Decreasing

$(-\infty, \infty)$

None

Graph:



Minimum

Maximum

None

None

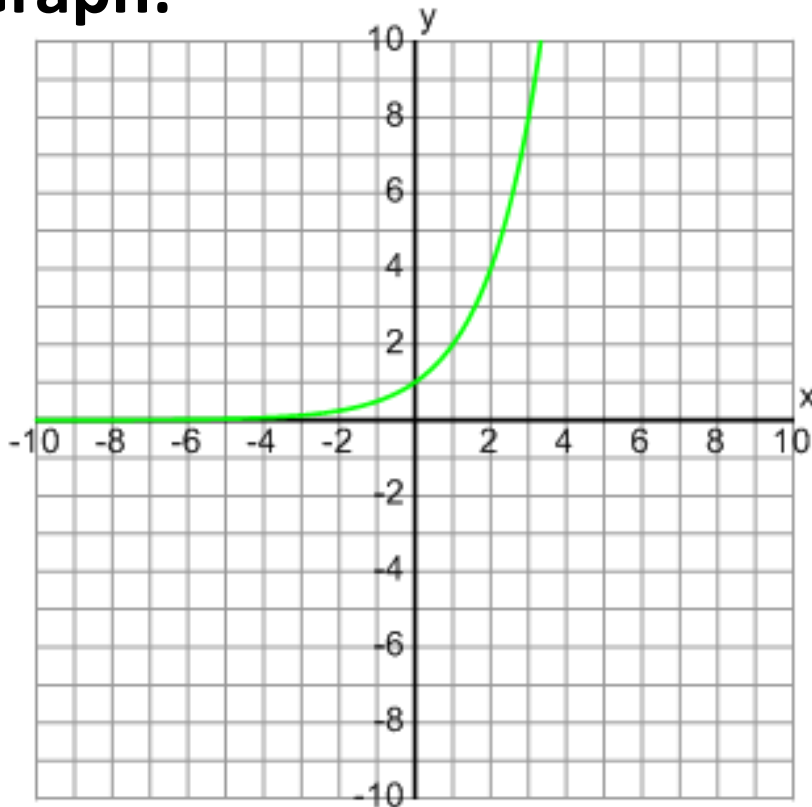
Exponential Function

Equation: $f(x) = a^x$

Even/Odd/Neither

Neither

Graph:



End Behavior

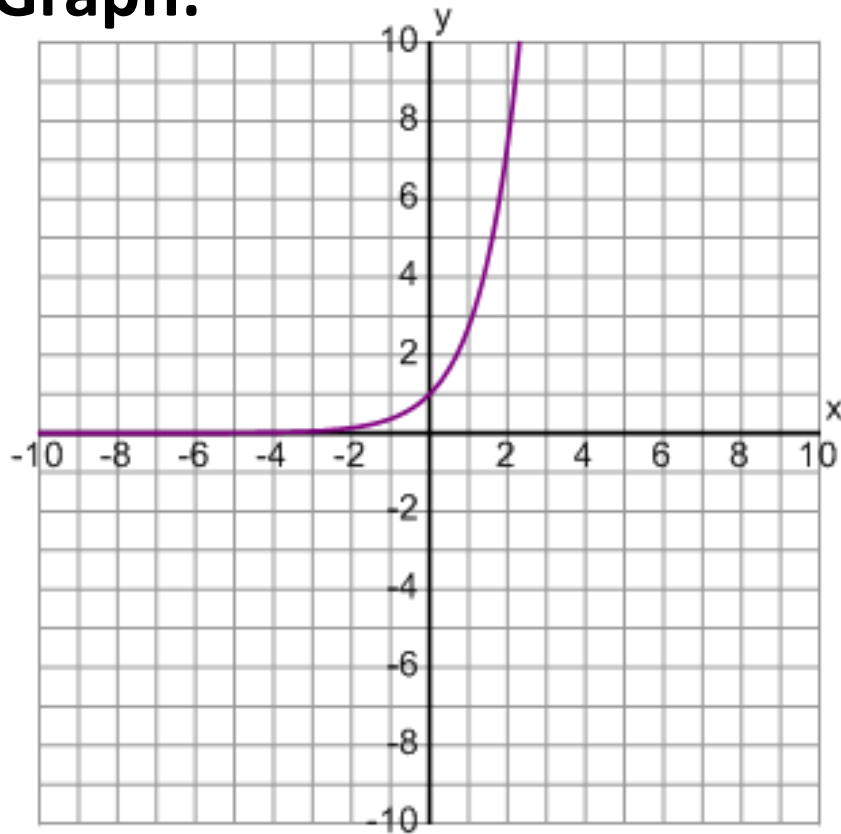
$$\lim_{x \rightarrow -\infty} f(x) = 0$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Exponential Function

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

Graph:



Domain

$$x \mid x \in \mathbb{R}$$

$$(-\infty, \infty)$$

Range

$$y \mid y > 0$$

$$(0, \infty)$$

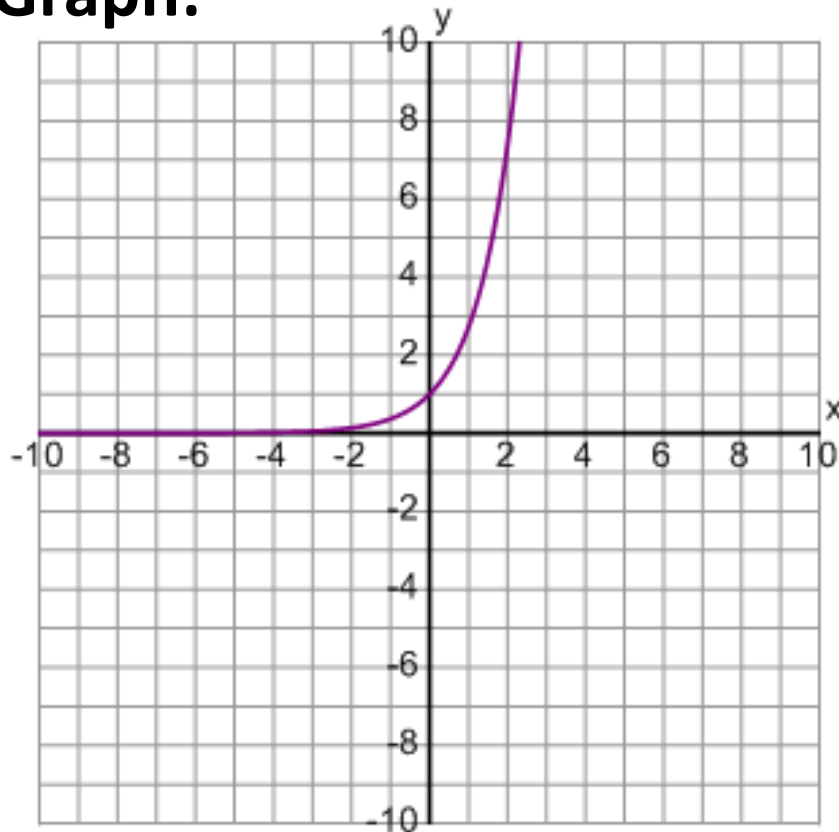
Continuity

yes

Exponential Function

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

Graph:



Increasing

$(-\infty, \infty)$

Decreasing

None

Minimum

None

Maximum

None

Exponential Function

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

Even/Odd/Neither

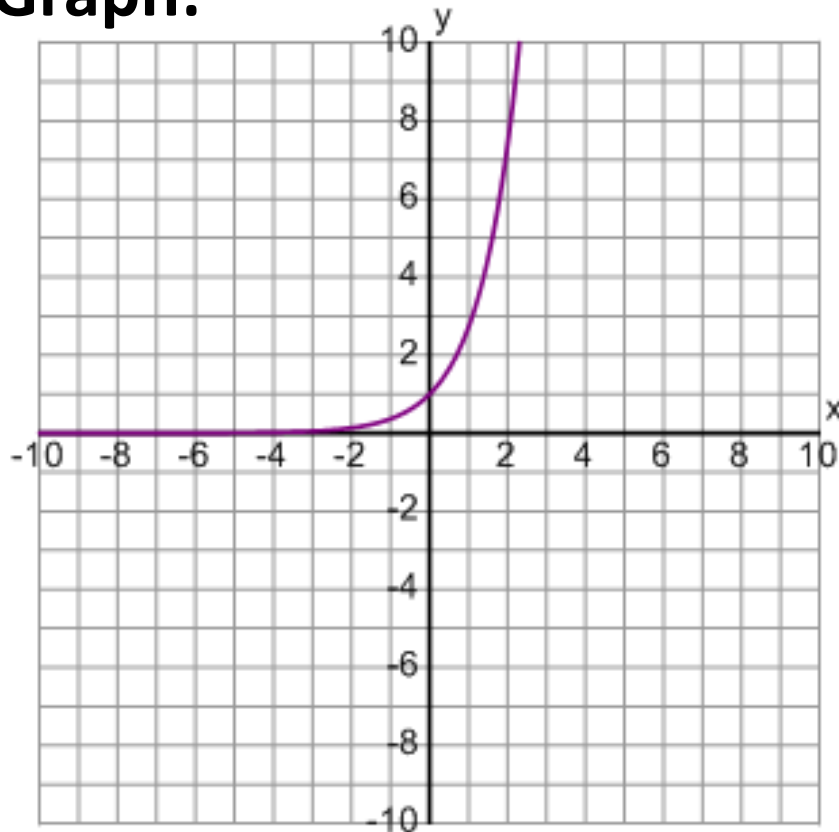
Neither

End Behavior

$$\lim_{x \rightarrow -\infty} f(x) = 0$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Graph:



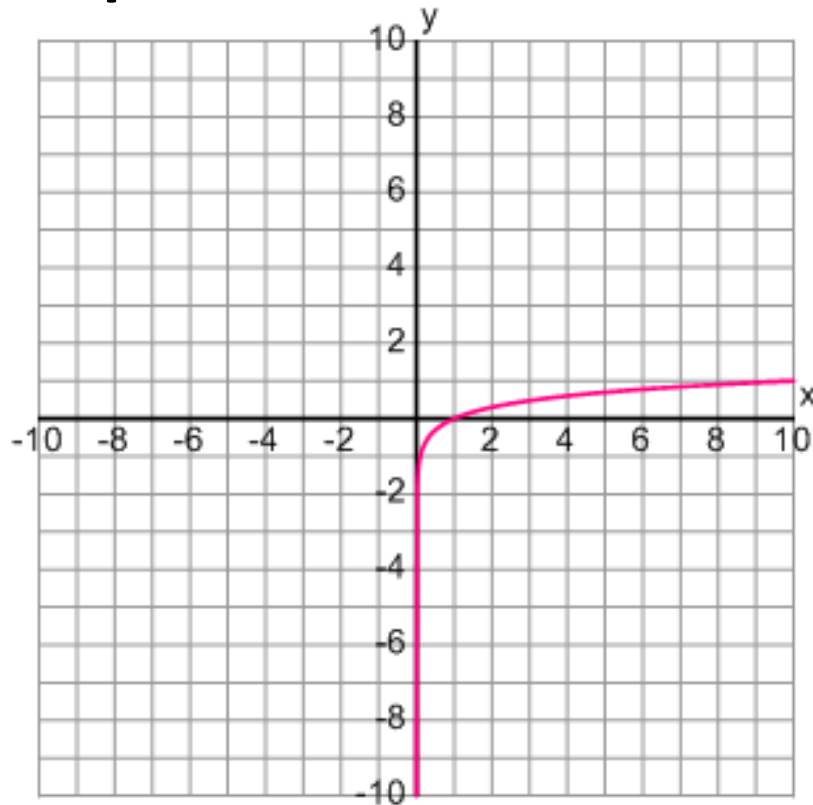
Logarithmic Function

Equation: $f(x) = \log(x)$

Domain

Range

Graph:



$$x | x > 0$$

$$y | y \in \mathbb{R}$$

$$(0, \infty)$$

$$(-\infty, \infty)$$

Continuity

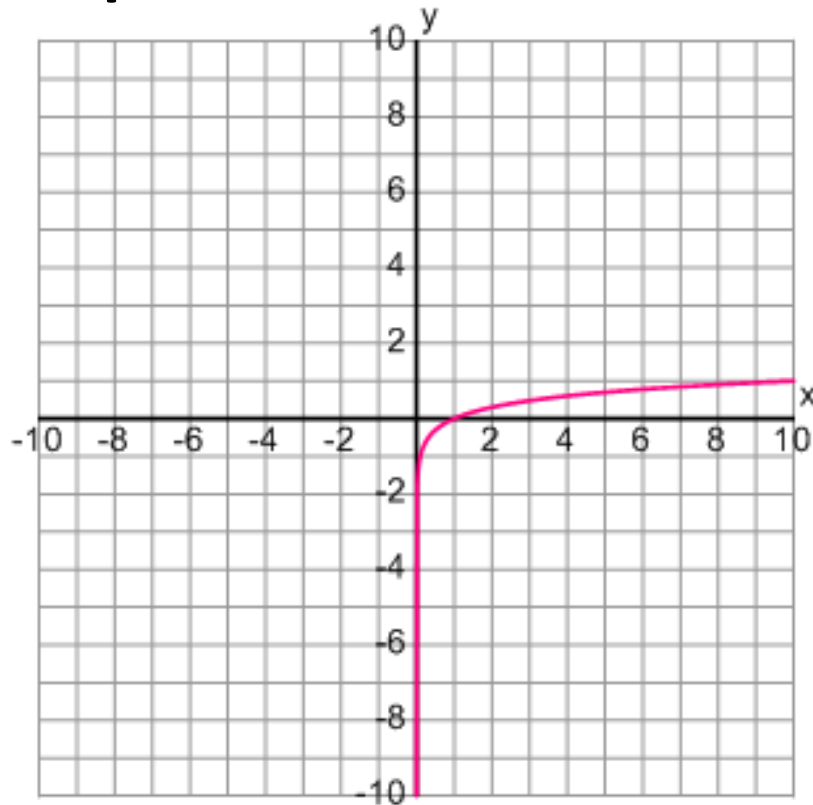
yes

Logarithmic Function

Equation: $f(x) = \log(x)$ Increasing

Decreasing

Graph:



$(0, \infty)$

None

Minimum

Maximum

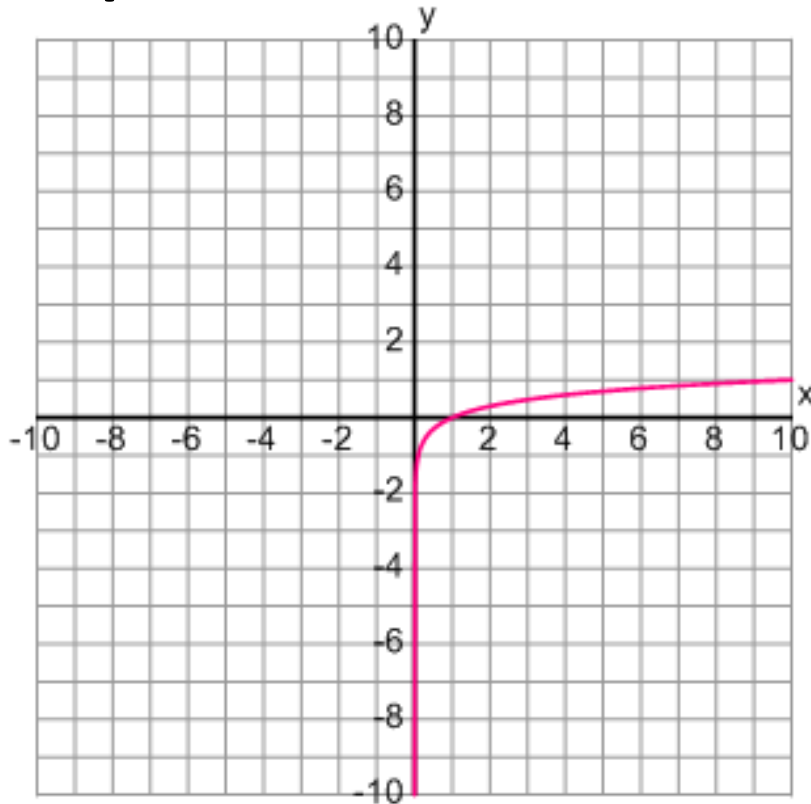
None

None

Logarithmic Function

Equation: $f(x) = \log(x)$ Even/Odd/Neither

Graph:



Neither

End Behavior

$$\lim_{x \rightarrow 0^+} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Natural Log Function

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

Domain

Range

$$x | x > 0$$

$$y | y \in \mathbb{R}$$

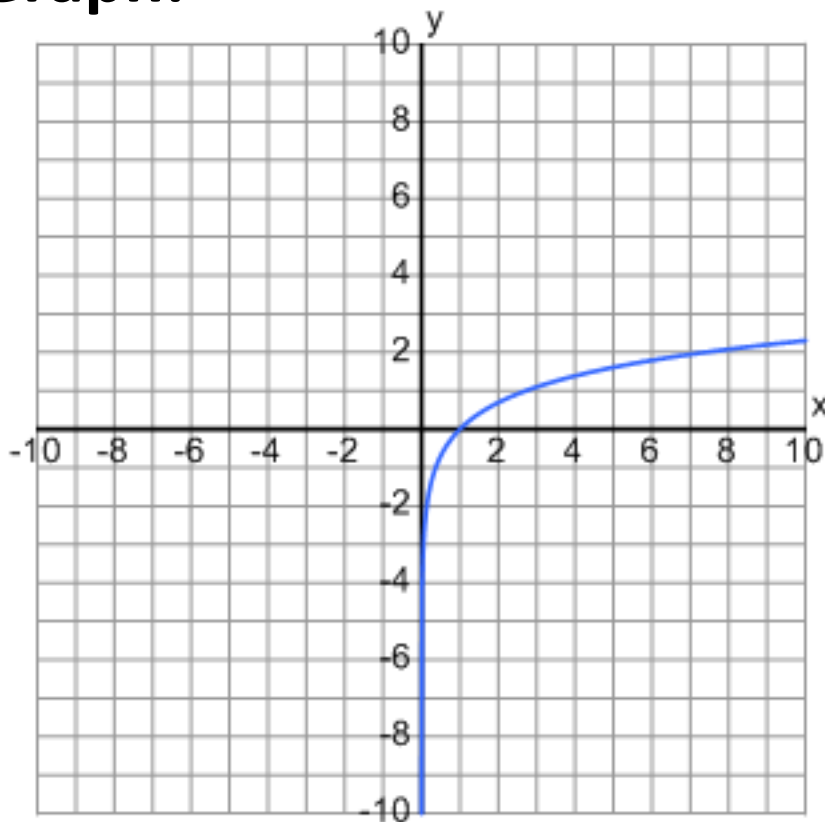
$$(0, \infty)$$

$$(-\infty, \infty)$$

Continuity

yes

Graph:



Natural Log Function

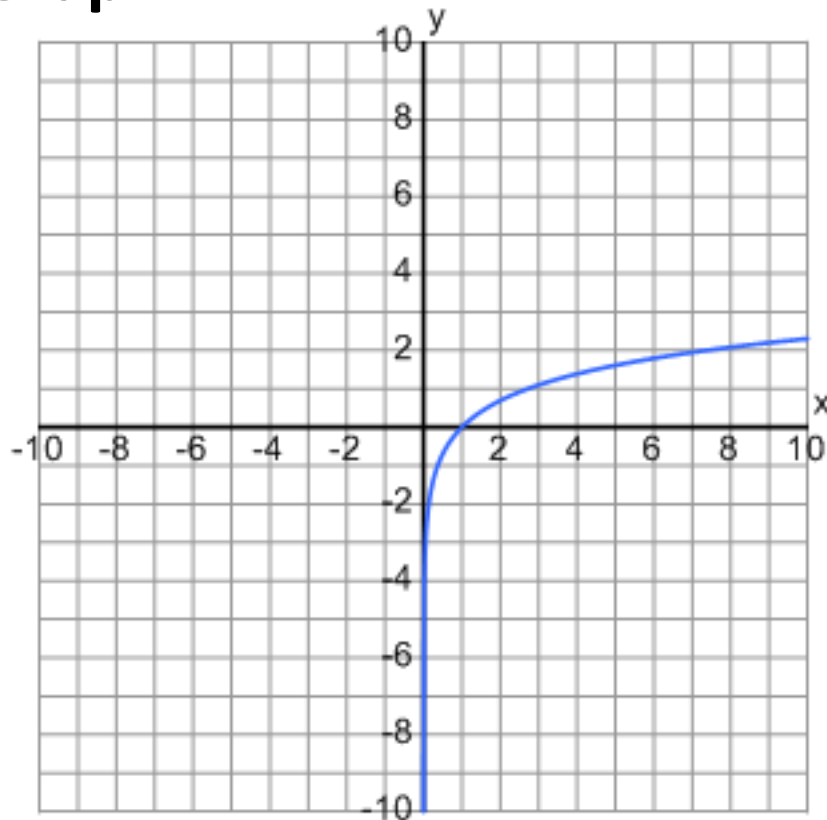
Equation: $f(x) = \ln(x)$ Increasing

Decreasing

Graph:

$(0, \infty)$

None



Minimum

Maximum

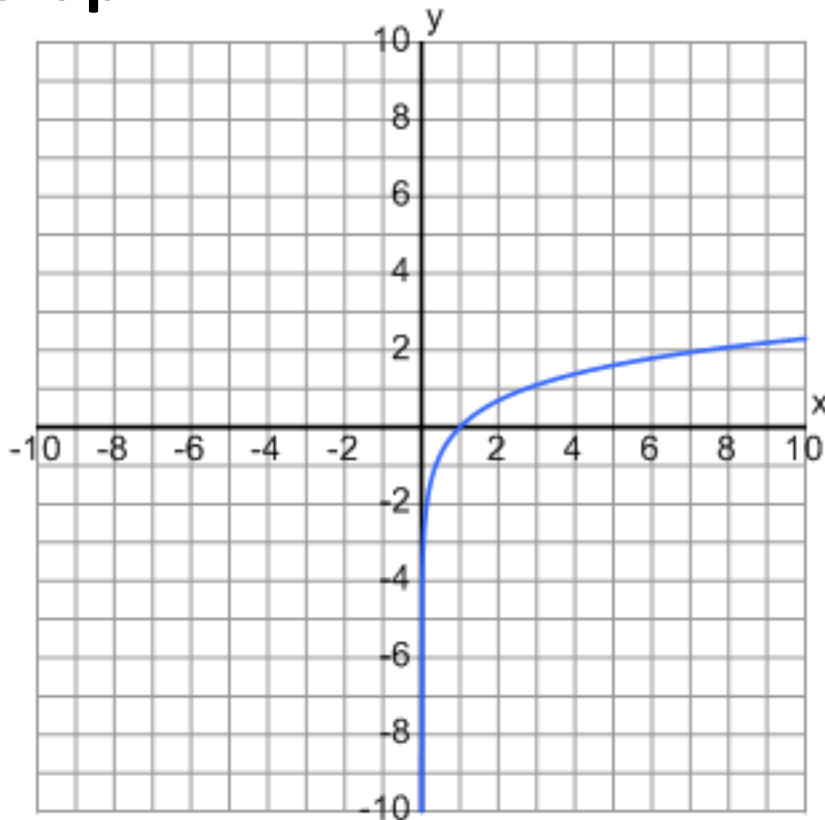
None

None

Natural Log Function

Equation: $f(x) = \ln(x)$ Even/Odd/Neither

Graph:



Neither

End Behavior

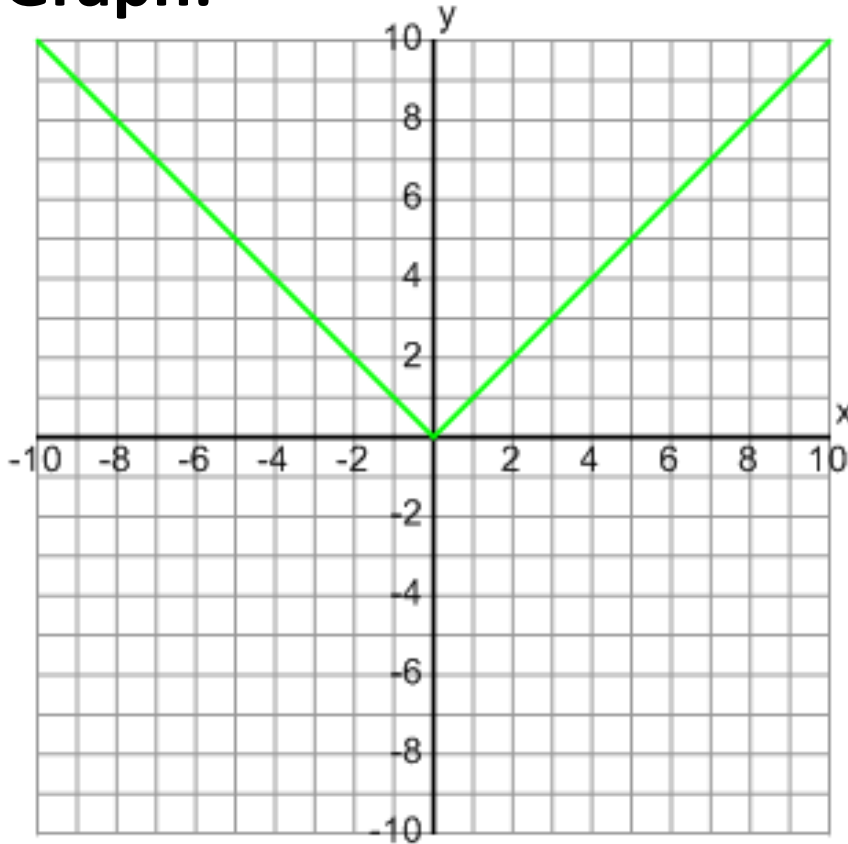
$$\lim_{x \rightarrow 0^+} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Absolute Value Function

Equation: $f(x) = |x|$

Graph:



Domain

$$x \mid x \in \mathbb{R}$$

$$(-\infty, \infty)$$

Range

$$y \mid y \geq 0$$

$$[0, \infty)$$

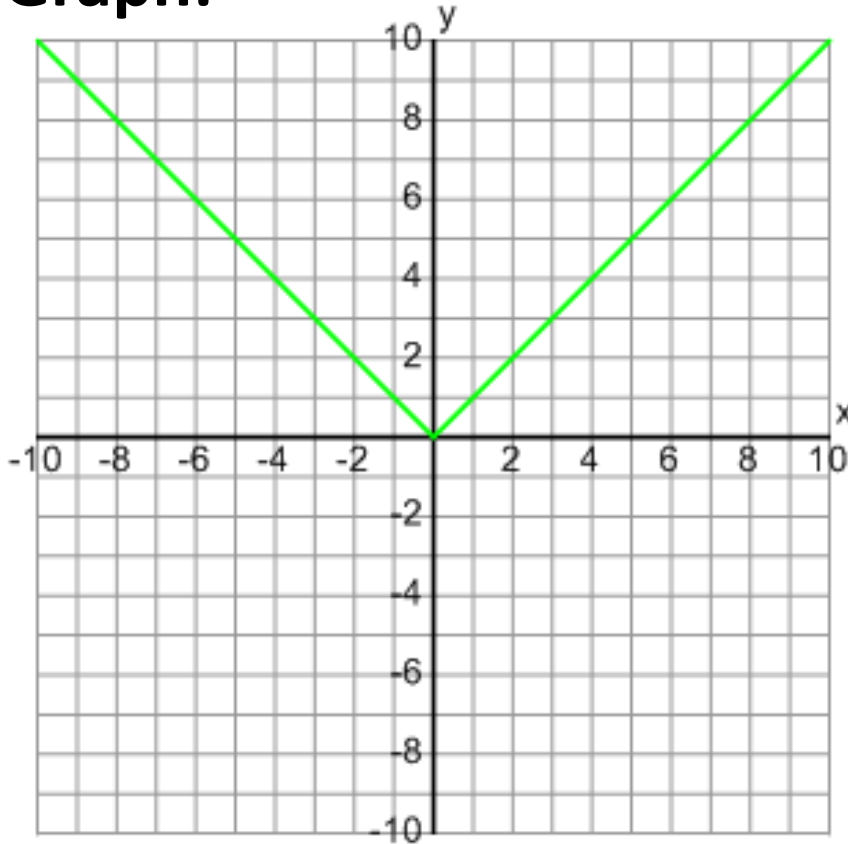
Continuity

yes

Absolute Value Function

Equation: $f(x) = |x|$

Graph:



Increasing

$(0, \infty)$

Decreasing

$(-\infty, 0)$

Minimum

$(0, 0)$

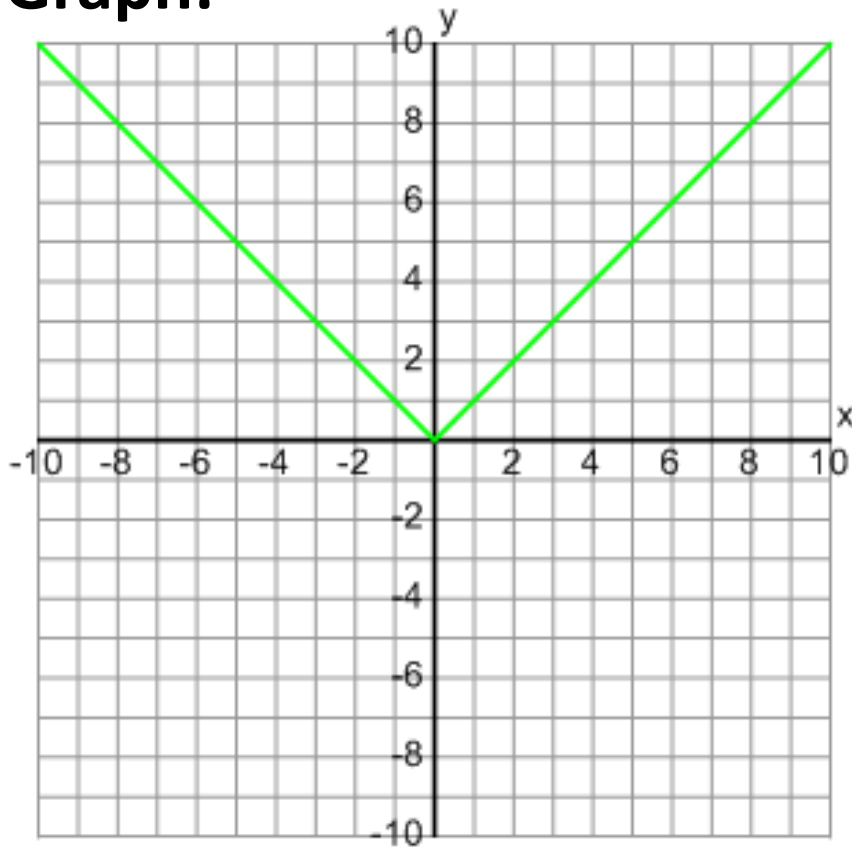
Maximum

None

Absolute Value Function

Equation: $f(x) = |x|$

Graph:



Even/Odd/Neither

Even

End Behavior

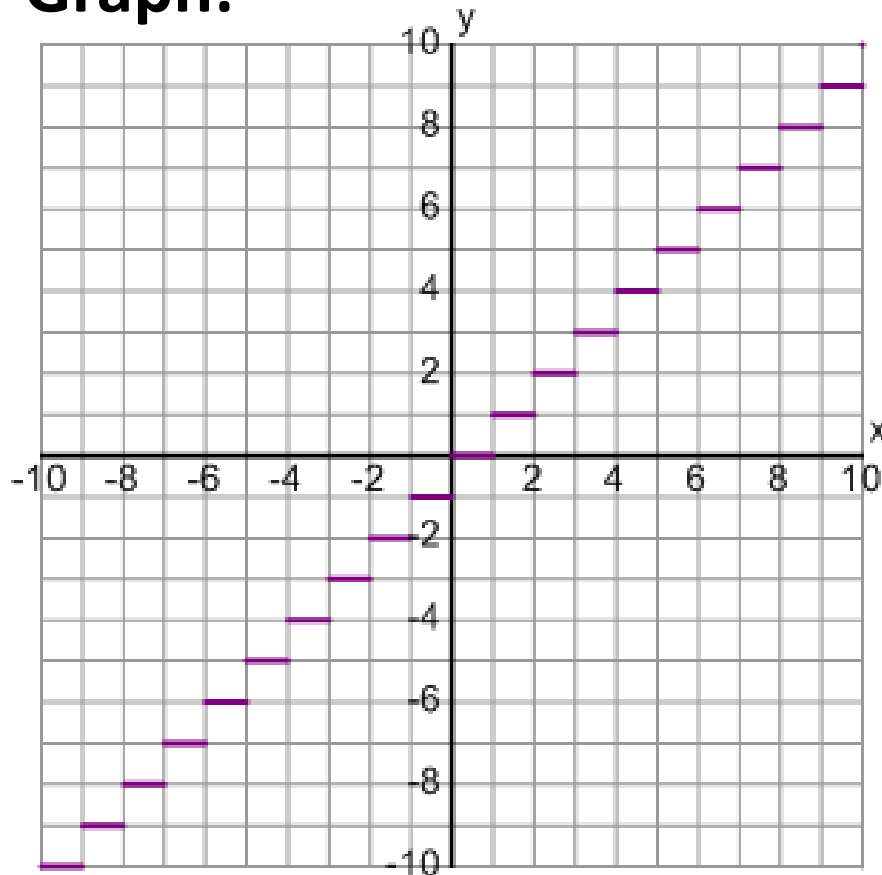
$$\lim_{x \rightarrow -\infty} f(x) = \infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$

Greatest Integer Function

Equation: $f(x) = \lfloor x \rfloor$

Graph:



Domain

$$x | x \in \mathbb{R}$$

Range

$$y | y \in \mathbb{Z}$$

$$(-\infty, \infty) \{ \dots, -2, -1, 0, 1, 2, \dots \}$$

Continuity

no

Greatest Integer Function

Equation: $f(x) = x$

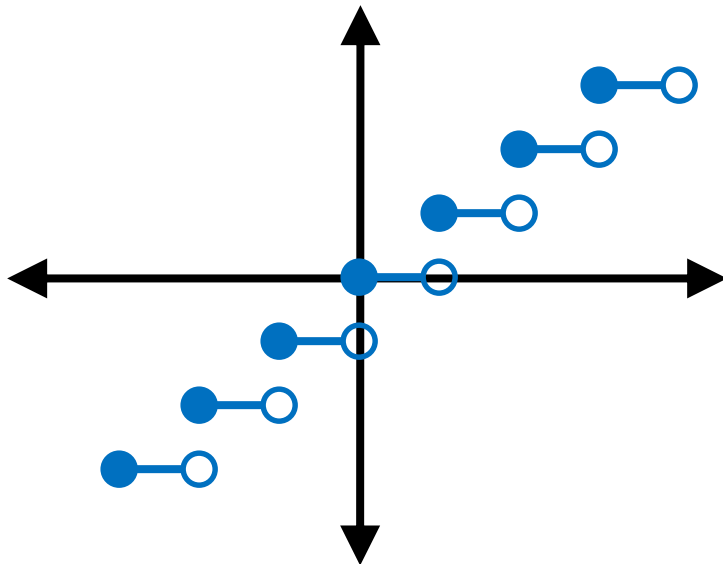
Increasing

Decreasing

Graph:

$\{\dots, -2, -1, 0, 1, 2, \dots\}$

None



Constant

$\{ \dots (-2, -1) \cup (-1, 0) \cup (0, 1) \cup (1, 2) \dots \}$

Minimum

None

Maximum

None

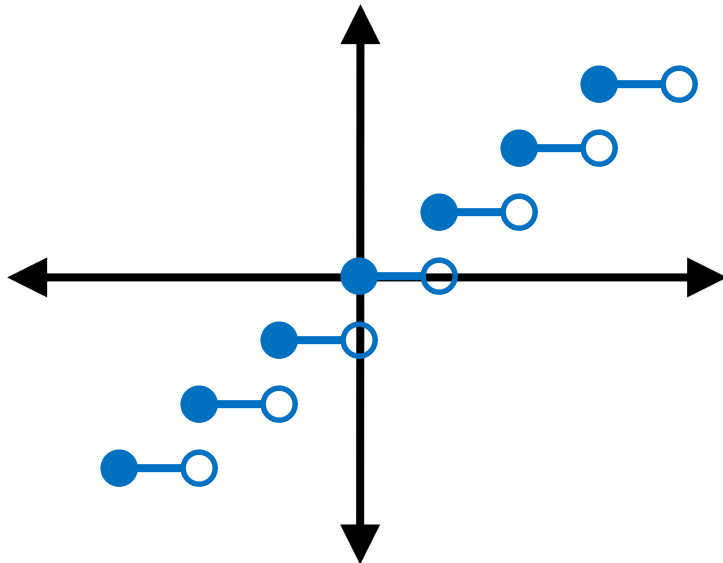
Greatest Integer Function

Equation: $f(x) = x$

Even/Odd/Neither

Graph:

Neither



End Behavior

$$\lim_{x \rightarrow -\infty} f(x) = -\infty$$

$$\lim_{x \rightarrow \infty} f(x) = \infty$$