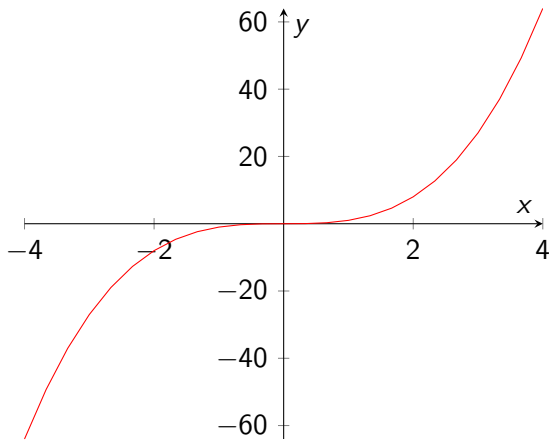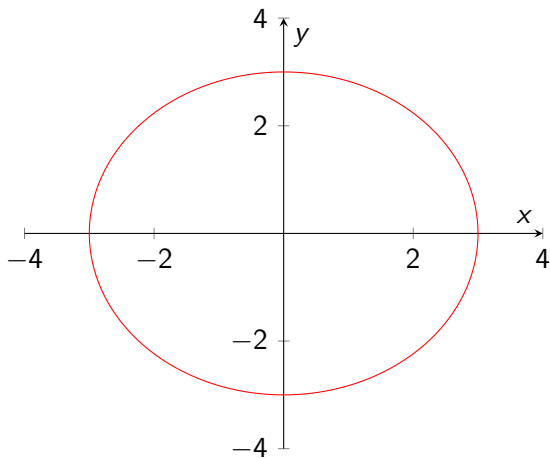# Graphs

Scott N. Walck

September 6, 2022
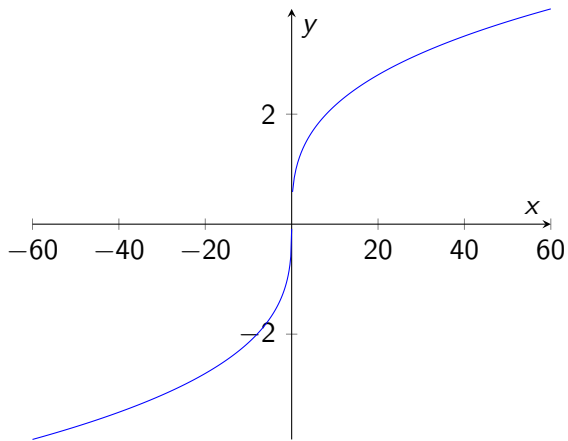
Is y a function of x?
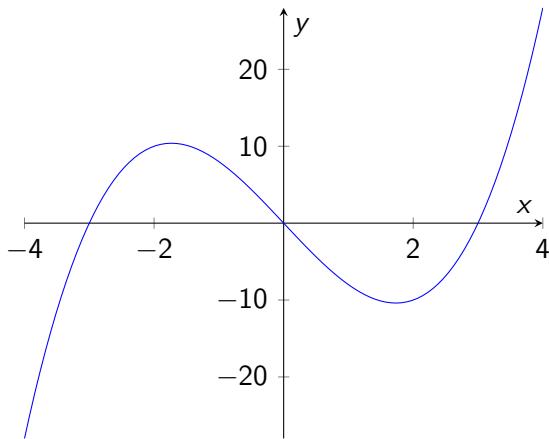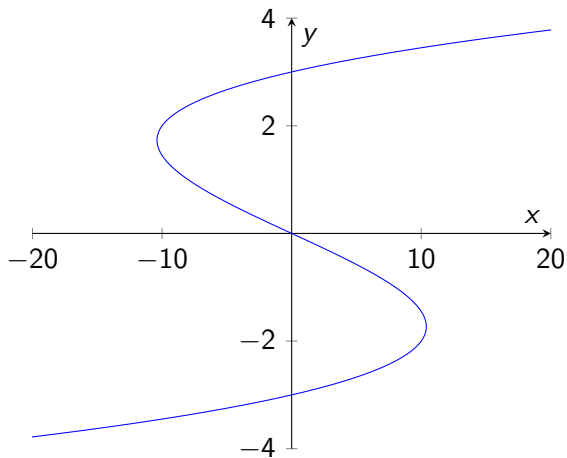
Is y a function of x?

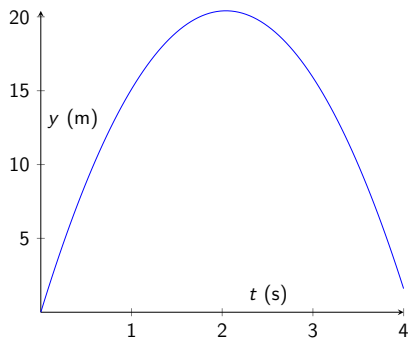Is y a function of x?

Is y a function of x?

Is y a function of x?

Vertical line test

▶ If a vertical line placed anywhere on the graph intersects exactly one point, then the vertical coordinate of the graph is a function of the horizontal coordinate.
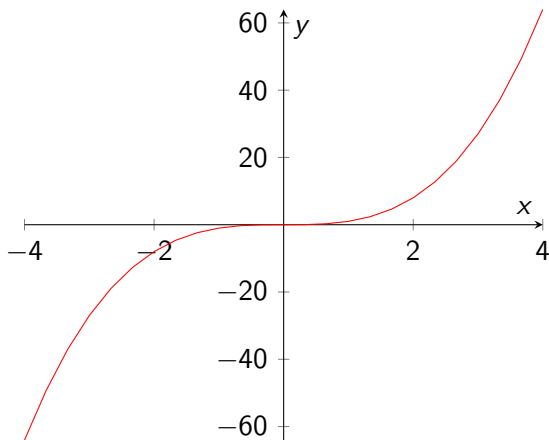
Throw a ball straight up at 20 m/s.

$$y = (-4.9 \text{ m/s}^2)t^2 + (20 \text{ m/s})t$$
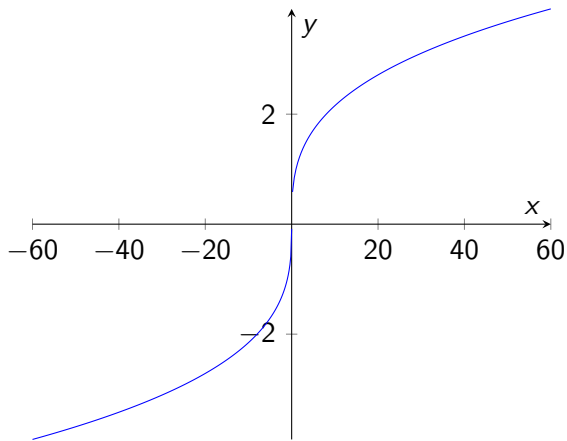
- ▶ Is y a function of t?
- ▶ Is t a function of y?

Meaning of the questions

- Is y a function of t?
  - What is *the* position y of the ball at time t?
- Is t a function of y?
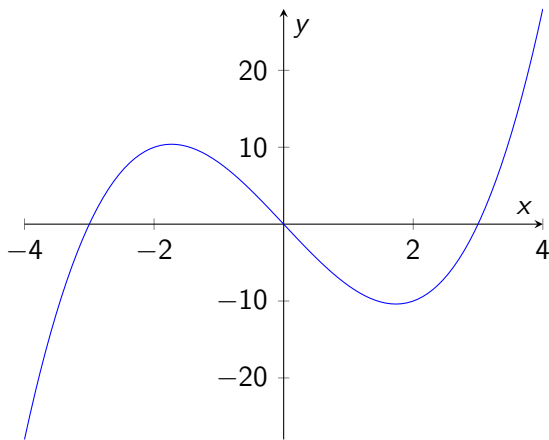 - What is *the* time t of the ball at position y?

Does this function have an inverse?

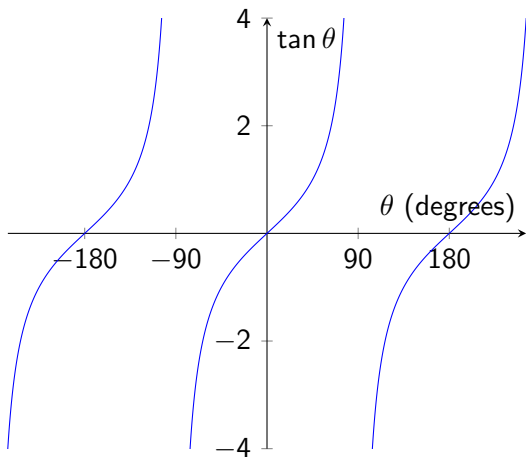# Does this function have an inverse?

Does this function have an inverse?

Horizontal line test

- ▶ If a horizontal line placed anywhere on the graph of a function intersects exactly one point, then the function has an inverse.

Graph of the tangent function in degrees

Graph of the tangent function in radians