How Long to Reach the Summit?

Name:_____

Mount Bierstadt Trail is a popular 6.8 mile out-and-back trail in Silver Plume, Colorado. It is one of Colorado's iconic 14-ers, with a peak of 14,066 feet. The table below gives the elevation of a hiker climbing Mt. Bierstadt at selected times on his trip. Time is given in hours and elevation is given in feet.

1. Sketch a rough graph of this hiker's elevation over time.

Time (hours)	Elevation (above sea level)
0	11,629 feet
1	11,900 feet
2.5	13,060 feet
4	14,066 feet
5	12,619 feet
5.5	11, 629 feet

2. Can the hiker's elevation be considered a function? Why or why not?

3. Explain why each elevation (except the summit) is reached at least twice on the hiker's journey.

4. Suppose that we wanted to find the *inverse*: to figure out the time at which the hiker reached a certain elevation.
   a. Identify the input and output of this inverse relation.

   b. Estimate the time at which the hiker was at an elevation of 10,500 feet or explain why this is not possible.

   c. Explain how you can use the graph to estimate at what time the hiker was half-way up the mountain (12,978 feet).

5. Is the inverse relation a function? How do you know?

Section 1.8 Day 2—Inverse Functions

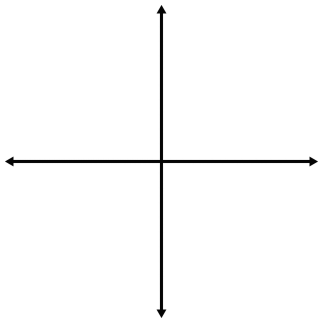
Important Ideas:

Check Your Understanding!

1. The function $H(t)$ gives the temperature of a town, in ˚Fahrenheit, *t* days into the calendar year.
   a. Is $H(t)$ a one-to-one function? How do you know?

   b. Explain what this tells you about whether or not H^{-1} is a function.

2. Sketch the graph of $f(x) = (x-3)^2$. Is the inverse of f a function? Support your answer with information from the graph. If not, how could you restrict the domain of f so that the inverse *is* a function?



3. Find the inverse of $y = \sqrt{x-4}$ and state its domain and range.