

MATH 1000 IN-CLASS ACTIVITY 3

MONDAY, JANUARY 22

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Name:

These discussion topics were inspired by the Chapter 2 of *How Not to Be Wrong* by Jordan Ellenberg, titled “Straight Locally, Curved Globally”.

For the following discussion, suppose you are driving in a car with a feature that, at the end of each trip, a screen displays a graph showing how far you had driven (on the vertical axis) as a function of time (in hours, on the horizontal axis).

- (1) Suppose you took a drive, and the displayed graph at the end was the perfectly straight line shown below. What does that tell you about the way that you were driving? Would you expect this to happen in real life?

- (2) Suppose, alternatively, that the graph of your drive was the non-straight curve shown below (the original straight line is also included for reference). Discuss the possibilities and limitations for how you could answer the question “How fast did you drive on your trip?”

- (3) Suppose you are driving and pressing the accelerator, and your speedometer needle quickly and smoothly goes from 55 to 65. At the precise moment that the needle touches 60, what does it really mean to say that you were driving 60 miles per hour at that moment, when you never maintained that speed for ANY actual duration of time in order to measure?
- (4) Going back to the picture from item (2), if we wanted to determine how fast you were driving at the precise moment one hour into your drive, how could we see that visually on the graph?