

Pathways Reading Guide M5 Section 1

Please read Module 5, section1 in your e-book, pp. 1 – 15. (Click on Module 5, then “text.”)

Be sure to *read with a pencil in hand* and attempt the examples before you read the solution given. Take notes of important definitions and ideas as you read. I don’t expect you to have 100% comprehension of everything in the section, but spending significant time trying to understand the main ideas will assist you as you work on the Investigation during our next class.

The big idea in this section is that the rate of change can change. It can increase or decrease or stay the same. Think of driving a car. Your speed can increase (you can accelerate) or it can decrease (you can decelerate). Before reading this section of the text, try to make a sketch of 3 different graphs of distance from Kent in term of time travelled. Let t be the time travelled and d be the distance from Kent since you left. For the first graph imagine driving at a constant rate of change for the entire trip. What does your graph look like? Now, imagine that you leave Kent at a constant rate of change, then speed up once you reach the turnpike. What would your graph look like? For the third graph, imagine leaving Kent at a constant rate of change, but then gradually slowing down as you travel through the neighboring city streets. Note that in all these scenarios, your **distance from Kent is increasing**, but your rate of change (speed) is either increasing or decreasing or staying the same.

The ebook refers to water filling bottles of different shapes and how the height changes in terms of the volume. Read examples 1 and 2, but be sure to watch the explanation in the video clip on p. 4. The video is only 4 minutes long and well worth your time.

As you read through the rest of the section (it is rather long!), be sure to think about the definition of increasing at an increasing rate on the top of page 9. Study carefully the graphs on p. 10, especially the last two, since many students have difficulty here. Do you understand why the rate of change is decreasing at an increasing rate in c) but decreasing at a decreasing rate in d)? The video clip on page 11 should help clarify this concept.

The video on page 14 discusses changes in the rates of change over very small intervals.

Finally, note the definition of rate of change of a function on an interval as the section ends on p. 15.