Quiz # 5
Math 101-Section 09 Calculus I
22 October 2015, Thursday

Bilkent University
Department of Mathematics

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YOUR NAME:

In this quiz you can use only pencils and erasers.

Show your work in detail, unless only an answer is required. Correct answer without proper explanation does not receive any partial credits.

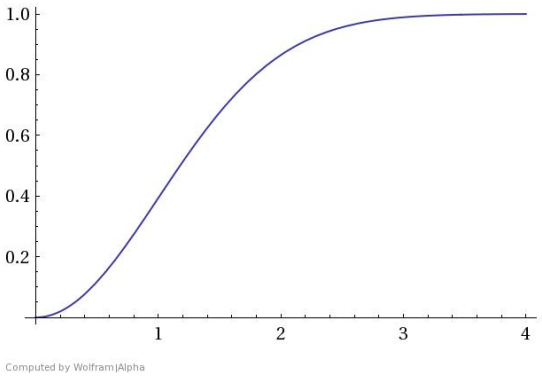
Q-1) Let $K(t)$ be a measure of the knowledge you gain by studying for an exam fot t hours. Which do you think is larger, $K(8)-K(7)$ or $K(2)-K(1)$? What is the concavity of the graph of K? Why?

: This is an attendance quiz.

Answer:

It is reasonable to say that during the first few hours of studying you absorb a lot of information. After that you get saturated and don't learn much more. But if you continue to study you hone your skills and this gains you time in the exam. So I would say that the graph of K starts out as a concave up curve, meaning that you learn fast. But then there is a critical time after which your learning starts to slow down. In Calculus we call that point inflection point. After that the graph of K is concave down, meaning that you are getting less and less from studying as far as acquiring knowledge is concerned. There should certainly be an upper bound to what you can learn and the curve of K must approach it asymptotically.

Here is my guess for the graph of $y = K(t)$.



According to my model $K(2) - K(1) = 0.47$, whereas $K(8) - K(7) = 0.0000000002$.

In fact, according to my model, you learn 39% of what you can possibly learn during the first hour. Then during the second hour you learn 47% more, totalling to 86%. By the end of the fourth hour you learned 99% of your target material. After that you should take a break!