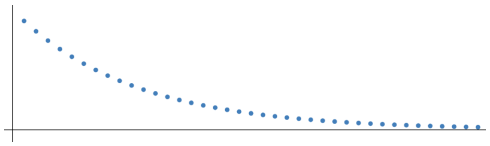
Part I: (due at the beginning of class Monday, March 11)

Definition 1. *A sequence* (a_n) *is*

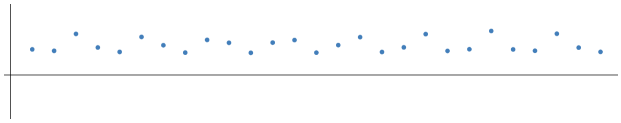
- increasing *if* $a_n \leq a_{n+1}$ *for all* n.
- decreasing *if* $a_n \geq a_{n+1}$ *for all* n.
- monotone *if* (a_n) *is either increasing everywhere or decreasing everywhere.*

Here's a picture of an increasing sequence:

Here's a picture of a decreasing sequence:



And here's a picture of a sequence that is not monotone:



Reading Questions

1. Since sequences have the natural numbers $(1, 2, 3, \ldots)$ as their domain, sequences are infinite. Even though things in this world are not infinite, we can use sequences to describe situations in real life, and doing so can allow us to make useful predictions. For instance, you can describe the amount of money in a bank account that's accruing interest with the interest compounded monthly with a sequence. If you're not taking any money out of the account, this sequence would be increasing. For each of the following, give a briefly-explained example of a real-life situation which could be described by a sequence with the given property.
   (a) decreasing
   (b) not monotone
   (c) bounded above
   (d) bounded below

(e) bounded

Remember that what you turn in for Part I should have 3 parts, as mentioned in the syllabus:

(a) Your responses to the reading questions.

(b) Your own questions/comments on the reading.

(c) The amount of time you spent on Part I (including the time spent reading/watching).

Part II: Exercises (prepare for class Friday, March 15)

Examples 6 and 7 on the blue Sequences handout.

Part III: Homework Problems (due Friday, March 15 at the beginning of class)

No new Part III problems this week. You may turn in one extra revision (so up to 4 revisions this week) of a previous Part III problem.

mini-Celebration of Learning Friday, March 15

The mini-Celebration of Learning may have problems on l'Hôpital's Rule and improper integrals (finding value of and/or using a comparison test to determine if the integral converges or diverges).