Course Algebra/Trig
Lesson 1.1
Topic   Recursively Defined Sequences
Pages   28-37

LEARNING GOALS

What should <u>all</u> students know and be able to do at the end of this lesson/unit/investigation?

<u>CONCEPTS</u>
1. Every recursive formula requires a starting term.
2. Terms in a recursive sequence can be generated by repeated addition or multiplication.
3. Every recursive formula requires a starting term.
4. Terms in a recursive sequence can be generated by repeated addition or multiplication.

<u>SKILLS</u>
1. Successfully use a recursive rule to generate a sequence of values
2. Correctly write a recursive formula from a context when given a starting point and the rate of change
3. Generate a recursive sequence on a calculator

<u>NEW VOCABULARY</u>
1. **Recursion** is a process in which each step of a pattern is dependent on the step or steps that come before it.
2. A **sequence** is an ordered list of numbers.
3. Each number in a sequence is called a **term**.
4. The nth term, written u_n, is called the **general term**.

<u>NEW NOTATION</u>
1. u_1
2. u_n
3. u_{n-1}
4. $u_n = u_{n-1} + d$
5. $u_n = r \cdot u_{n-1}$

<u>RELATED HOMEWORK</u>
Problems 1, 8a, 8b, 9a

What additionally should <u>most</u> students know and be able to do at the end of this lesson/unit/investigation?

<u>CONCEPTS</u>
1. An arithmetic sequence changes by repeated addition.
2. A geometric sequence changes by repeated multiplication.

<u>SKILLS</u>
1. Distinguish between an arithmetic and geometric sequence by looking at the formula
2. Generate a recursive rule from a table by recognizing the common difference or factor
3. Generate a recursive rule from a context by recognizing the common difference or factor

<u>NEW VOCABULARY</u>
1. An **arithmetic sequence** is a sequence in which each term is equal to the precious term plus a constant.
2. The constant is called the **common difference**.
3. A **geometric sequence** is a sequence in which each term is equal to the previous term multiplied by a constant.
4. This constant is called the **common ratio**.

<u>RELATED HOMEWORK</u>
Problems 2, 3, 4, 5, 7, 8c, 11

What additionally should <u>some</u> students know and be able to do at the end of this lesson/unit/investigation?

<u>CONCEPTS</u>
Recursive rules can be used to model data sets that are not precise or complete.

<u>SKILLS</u>
1. Distinguish between arithmetic and geometric sequences by looking at a table, graph, and context
2. Estimate arithmetic and geometric sequences from inexact data
3. Interpolate missing data in both arithmetic and geometric sequences
4. Set up a calculator to number each term when generating a recursive sequence

<u>RELATED HOMEWORK</u>
Problems 6, 9b, 10, 12, 13