DOWNLOAD PDF SEQUENCE AND SERIES PROBLEMS

Chapter 1 : Arithmetic sequences and series (Algebra 2, Sequences and series) â€“ Mathplanet

Chapter 4: Series and Sequences. Here are a set of practice problems for the Series and Sequences chapter of the Calculus II notes. If you'd like a pdf document containing the solutions the download tab above contains links to pdf's containing the solutions for the full book, chapter and section.

I fell into the trap that many web developers fall into. I knew what was in the menus and so clearly all the users would as well It was appearing that many new users were not aware of the Practice Problems on the site so I added a set of links at the top to allow for easy switching between the Notes, Practice Problems and Assignment Problems. They will only appear on the class pages which have Practice and Assignment problems. The links should stay at the top as you scroll through the page. Paul November 7, Mobile Notice You appear to be on a device with a "narrow" screen width i. Due to the nature of the mathematics on this site it is best views in landscape mode. If your device is not in landscape mode many of the equations will run off the side of your device should be able to scroll to see them and some of the menu items will be cut off due to the narrow screen width. Note that some sections will have more problems than others and some will have more or less of a variety of problems. Most sections should have a range of difficulty levels in the problems although this will vary from section to section. Here is a list of all the sections for which practice problems have been written as well as a brief description of the material covered in the notes for that particular section. Sequences â€" In this section we define just what we mean by sequence in a math class and give the basic notation we will use with them. We will focus on the basic terminology, limits of sequences and convergence of sequences in this section. More on Sequences â€" In this section we will continued examining sequences. We will determine if a sequence in an increasing sequence or a decreasing sequence and hence if it is a monotonic sequence. Series â€" The Basics â€" In this section we will formally define an infinite series. We will also give many of the basic facts, properties and ways we can use to manipulate a series. We will also briefly discuss how to determine if an infinite series will converge or diverge a more in depth discussion of this topic will occur in the next section. We will illustrate how partial sums are used to determine if an infinite series converges or diverges. We will also give the Divergence Test for series in this section. Special Series â€" In this section we will look at three series that either show up regularly or have some nice properties that we wish to discuss. Integral Test â€" In this section we will discuss using the Integral Test to determine if an infinite series converges or diverges. The Integral Test can be used on a infinite series provided the terms of the series are positive and decreasing. A proof of the Integral Test is also given. In order to use either test the terms of the infinite series must be positive. Proofs for both tests are also given. Alternating Series Test â€" In this section we will discuss using the Alternating Series Test to determine if an infinite series converges or diverges. The Alternating Series Test can be used only if the terms of the series alternate in sign. A proof of the Alternating Series Test is also given. Absolute Convergence â€" In this section we will have a brief discussion on absolute convergence and conditionally convergent and how they relate to convergence of infinite series. Ratio Test â€" In this section we will discuss using the Ratio Test to determine if an infinite series converges absolutely or diverges. The Ratio Test can be used on any series, but unfortunately will not always yield a conclusive answer as to whether a series will converge absolutely or diverge. A proof of the Ratio Test is also given. Root Test â€" In this section we will discuss using the Root Test to determine if an infinite series converges absolutely or diverges. The Root Test can be used on any series, but unfortunately will not always yield a conclusive answer as to whether a series will converge absolutely or diverge. A proof of the Root Test is also given. Strategy for Series â€" In this section we give a general set of guidelines for determining which test to use in determining if an infinite series will converge or diverge. A summary of all the various tests, as well as conditions that must be met to use them, we discussed in this chapter are also given in this section. Estimating the Value of a Series â€" In this section we will discuss how the Integral Test, Comparison Test, Alternating Series Test and the Ratio Test can, on occasion, be used to estimating the value of an infinite series. Power Series â€" In this section we will give the definition of the power series as well as the definition of the radius of convergence and interval of convergence for a power series. We will also illustrate how the Ratio Test and Root Test can be used to determine the radius and interval of convergence for a power series. Power Series and Functions â€” In this section we discuss how the formula for a convergent Geometric Series can be used to represent some functions as power series. To use the Geometric Series formula, the function must be able to be put into a specific form, which is often impossible. However, use of this formula does quickly illustrate how functions can be represented as a power series. We also discuss differentiation and integration of power series. This will work for a much wider variety of function than the method discussed in the previous section at the expense of some often unpleasant work. Applications of Series â€” In this section we will take a quick look at a couple of applications of series. We will illustrate how we can find a series representation for indefinite integrals that cannot be evaluated by any other method. We will also see how we can use the first few terms of a power series to approximate a function.

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Chapter 2 : Sequences and Series â€“ She Loves Math

Great American Novels, Ranked from "Pretty Great, Actually" to "Meh" By Elodie. 15 Brilliant Plot Ideas for Your YA Novel.

Site Navigation Applications of Sequences and Series Sequences and series, whether they be arithmetic or geometric, have may applications to situations you may not think of as being related to sequences or series. In order to work with these application problems you need to make sure you have a basic understanding of arithmetic sequences , arithmetic series , geometric sequences , and geometric series. An auditorium has 20 seats on the first row, 24 seats on the second row, 28 seats on the third row, and so on and has 30 rows of seats. How many seats are in the theatre? To solve this problem, we need to ask and answer some preliminary questions. First, what is the problem asking us to do? We need to know how many seats are in the auditorium which means we are counting things and finding a total. In other words, we need to add up all the seats on each row. Since we are adding things up, this can be looked at as a series. There are 20 seats on the first row, 24 on the second row, and 28 on the third row. Each row has four more seats than the one before it. Since we are adding four to each row, this is an arithmetic sequence of numbers that we will be adding up. So we now know that our goal is to find an arithmetic series. The formula for an arithmetic series is To solve this problem we need n, a1, and an. In this problem, n will be equal to 30 because we are being asked to find how many seats are in all 30 rows. Or to add up the seats in the 30 rows. The first term in the sequence, a1, is 20 because the problem tells us that the first row has 20 seats. The only thing left to do is find an which will be a So now we have So we now know that there are seats on the 30th row. We can use this back in our formula for the arithmetic series. Suppose you go to work for a company that pays one penny on the first day, 2 cents on the second day, 4 cents on the third day and so on. If the daily wage keeps doubling, what will you total income be for working 31 days? This problem is geometric because the problem says that the salary from the previous day is doubled, or multiplied by 2. When we are multiplying by the same number each time, this is a geometric sequence. But what do we need to do with this geometric sequence? When dealing with total amounts, like in the previous example, we need to add the terms in a sequence. In this case, since we will be adding terms in a geometric sequence, we will be finding a geometric series. So we need the formula for a geometric series. We need to know n, a1, and r. We also know the first term which is 0. This should give us enough information to find the answer. Not a bad job! Examples Logs are stacked in a pile with 24 logs on the bottom row and 15 on the top row. There are 10 rows in all with each row having one more log than the one above it. How many logs are in the stack? What is your answer? Each hour, a grandfather clock chimes the number of times that corresponds to the time of day. For example, at 3: How many times does the clock chime in a day? A ball is dropped from a height of 16 feet. Find the total distance traveled in 15 bounces.

Chapter 3 : Sequence and Series Practice Problems â€“ Frustruppa

Problem Solving on Brilliant, the largest community of math and science problem solvers.

We can specify a sequence in various ways. We can specify it by listing some elements and implying that the pattern shown continues. Finally, we can also provide a rule for producing the next term of a sequence from the previous ones. This is called a recursively defined sequence. Since we start at the number 2 we get all the even positive integers. Alternatively, the difference between consecutive terms is always the same. We can continue this way and get: This sequence is not arithmetic, since the difference between terms is not always the same. If we look closely, we will see that we obtain the next term in the sequence by multiplying the previous term by the same number. We can continuer this way and get: Recursive Sequences We have already briefly discussed this idea in the first paragraph. We shall now discuss this in more detail, together with some extra examples. The latter rule is an example of a recursive rule. A recursively defined sequence, is one where the rule for producing the next term in the sequence is written down explicitly in terms of the previous terms. This is the well known Fibonacci sequence. Sequences via Lists The method of using a list to specify a sequence perhaps is the most tricky, since it requires us to look at a short piece of a sequence, and guess at the pattern or rule that is being used to produce the terms in the sequence. Now that we have seen some more examples of sequences we can discuss how to look for patterns and figure out given a list, how to find the sequence in question. Now that we have seen arithmetic, geometric and recursive sequences, one thing we can do is try to check if the given sequence is one of these types. To check if a sequence is arithmetic, we check whether or not the difference of consecutive terms is always the same. In this case, the difference changes: To check if a sequence is geometric we check whether or not the ratio of consecutive terms is always the same. In the case it is, so we conclude that the sequence is geometric: We can now try to see if the sequence is arithmetic. If we look at the differences of consecutive terms, we get:

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Chapter 4 : Algebra 2 Worksheets | Sequences and Series Worksheets

Arithmetic sequences are used throughout mathematics and applied to engineering, sciences, computer sciences, biology and finance problems. A set of problems and exercises involving arithmetic sequences, along with detailed solutions and answers, are presented.

For example, if we are told that the first two terms add up to the fifth term, and that the common difference is 8 less than the first term we can take this equation: The first term and the second term of an arithmetic sequence add to The second and third term add to What is the common difference? The first three terms of an arithmetic sequence add to 63 less than the sum of the fourth, fifth, and sixth terms. The sum of the first two terms of an arithmetic sequence is 20 less than the third term. What is the common difference, in terms of the first term? If the third term of an arithmetic sequence is 14, and the fifth term is 22, what is the eighth term? The sum of the first four terms of an arithmetic sequence is , and the common difference is 2. What is the first term? In an arithmetic sequence, the common difference is twice the first term, and the second term is What is the third term? In an arithmetic sequence, all the terms are odd. If the first term is less than 10, and the second term is greater than 10, what is the least possible value of the 4th term? The sum of the first two terms of an arithmetic sequence is equal to the sum of the third and fourth terms. The common difference in an arithmetic sequence is If the sum of the first 4 terms is 62, what is the first term? The sum of the first 2 terms of an arithmetic sequence is 4 more than the sum of the first 2 terms of an arithmetic sequence with the same first term, but the opposite common difference. Assign this reference page Click here to assign this reference page to your students. Terms of an Arithmetic Sequence Arithmetic Series.

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Chapter 5 : Arithmetic Sequences Problems with Solutions

Review sequences and then dive into arithmetic and geometric series.

Arithmetic Sequences Problems with Solutions Arithmetic sequences are used throughout mathematics and applied to engineering, sciences, computer sciences, biology and finance problems. A set of problems and exercises involving arithmetic sequences, along with detailed solutions and answers, are presented. An online calculator to calculate the sum of the terms in an arithmetic sequence. Problem 1 The first term of an arithmetic sequence is equal to 6 and the common difference is equal to 3. Find a formula for the n th term and the value of the 50 th term Solution to Problem 1: Find the value of the 20 th term Solution to Problem 2: Find its 15 th term. Solution to Problem 3: Find its th term. Solution to Problem 4: Now use the value of d in one of the equations to find a1. Solution to Problem 5: The sequence of integers starting from 1 to is given by 1 , 2 , 3 , 4 , The first term is 1 and the last term is and the common difference is equal to 1. We have the formula that gives the sum of the first n terms of an arithmetic sequence knowing the first and last term of the sequence and the number of terms see formula above. Solution to Problem 6: The sequence of the first 50 even positive integers is given by 2 , 4 , 6 , Solution to Problem 7: The first few terms of a sequence of positive integers divisible by 5 is given by 5 , 10 , 15 , We need to know the rank of the term

Chapter 6 : Calculus II - Convergence/Divergence of Series (Practice Problems)

The method of using a list to specify a sequence perhaps is the most tricky, since it requires us to look at a short piece of a sequence, and guess at the pattern or rule that is being used to produce the terms in the sequence.

Chapter 7 : Cool math Algebra Help Lessons: Sequences & Series

Sequence And Series Problems For Jee Main | Easy Methods & Tricks To Crack Jee Maths Questions, What Does It Feel Like To Invent Math, Newton's Laws Of Motion (Nlm) For Jee Main & Advanced Physics | Iit Jee & Class 11 Physics, How To Calculate Cube Roots In Your Head, 2.

Chapter 8 : Series | Algebra II | Math | Khan Academy

Chapter 11 Sequences and Series and then lim iâ†'âˆž 1âˆ' 1 2i = 1âˆ'0 = 1. There is one place that you have long accepted this notion of inï¬•nite sum without really thinking of it as a sum.

Chapter 9 : Sequences and Word Problems- MathBitsNotebook(A1 - CCSS Math)

Given a verbal description of a real-world relationship, determine the sequence that models that relationship.