Pre-Calculus Math 12

Chapter 4: Sequences and Series

Lesson 1: Geometric Sequences

Question #1

Reference Q.10784

Is the following sequence a geometric or arithmetic sequence?

$-26, -18, -10, -2, 6...$

Question #2

Reference Q.10786

Is the following sequence a geometric or arithmetic sequence?

$8, 4, 2, 1...$

Question #3

Reference Q.10785

Is the following sequence a geometric or arithmetic sequence?

$\frac{1}{4}, \frac{3}{4}, \frac{9}{4}...$

Question #4

Reference Q.10787

Is the following sequence a geometric or arithmetic sequence?

$-2.25, -2, -1.75, -1.5...$

Question #5

Reference Q.10788

Given $a = -15$ and $r = -\frac{1}{3}$, determine the general formula for the geometric sequence and find the 11th term.

Question #6

Reference Q.10789

Given $a = 11$ and $r = \frac{5}{4}$, determine the general formula for the geometric sequence and find the 78th term.

Question #7

Reference Q.10790

What are the next 4 terms of the geometric sequence?

$\frac{1}{2}, 4, 32, 256...$

Question #8

Reference Q.10791

What are the next 3 terms of the geometric sequence?

$15, -30, 60...$

Question #9

Reference Q.10792

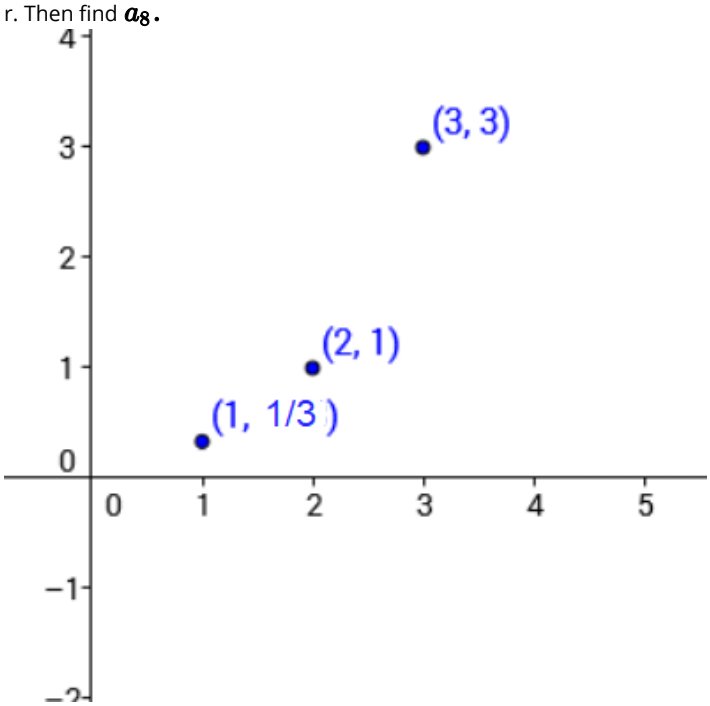
What are the next 4 terms of the geometric sequence?

$20, -10, 5...$

Question #10

Reference Q.10793

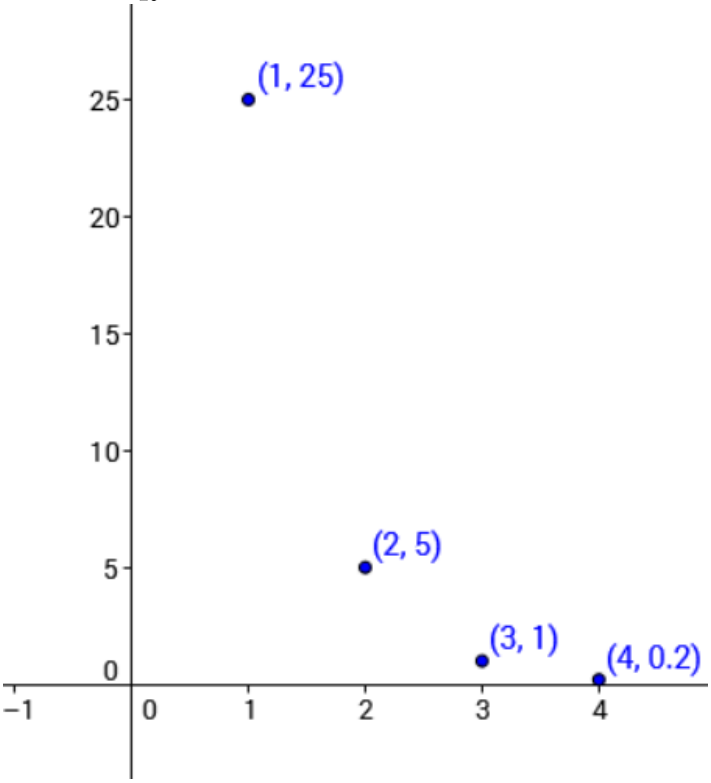
Given the following graph of a geometric series find the common ratio r. Then find a_8.



Question #11

Reference Q.10794

Given the following graph of a geometric series find the common ratio, r. Then find a_{16}.



Question #12

Reference Q.10795

Given the geometric sequence defiend by the table, find r, determine the general formula for the sequence, and then find a_7.

n	4	5	6
a_n	$\frac{21}{64}$	$\frac{-21}{256}$	$\frac{21}{1024}$

Question #13

Reference Q.10796

Given the geometric sequence defined by the table, find r, write the general formula for the geometric sequence, and then find a_8.

n	3	7
$$ a_n $$	176	45056

Question #14

Reference Q.12013

A geometric sequence is defined by the equation $a_n = (3)^{1+2n}$. What are the first three terms of the sequence and what is the common ratio, r?

Question #15

Reference Q.12014

A geometric sequence is defined by the equation $a_n = (-4)^{2-3n}$, What are the first three terms of the sequence and what is the common ratio, r?

Question #16

Reference Q.12015

A geometric sequence is defined by the equation $a_n = \left(\frac{1}{2}\right)^{n+3}$,

What are the first three terms of the sequence and what is the common ratio, r?

Question #17

Reference Q.10797

After knee surgery your doctor tells you that you can return to you jogging program slowly. For th the first week he suggests10 minutes a day and every week after that you can increase your time by a quarter of the time you spent the previous week. How many weeks will it be when you hit 60 minutes a day?

Question #18

Reference Q.10798

The income of George's family in 2010 was $65,000. The family's income increased by 15% each year. What was the family's income in 2014?

Question #19

Reference Q.12016

A stock market invester observes the following for the price of two stocks that he is looking at investing in. The first is increasing in a linear fashion (arithmetic) Stock A: $a_n = 12n + 80$ where a_n is the value of th stock and n is the number of years. The second is increasing at an exponenital rate (geometric): Stock B: $a_n = 19(1.15)^{n-1}$.

Assuming these stock values ontinue to increase in the same manner until he cashes them out, which stock option is worth more in 25 years? And how much more is the stock worth per share?

Question #20

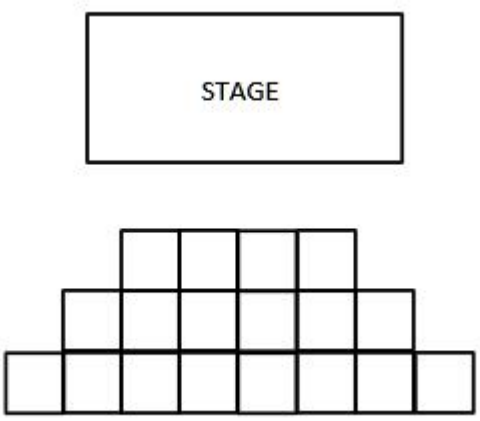
Reference Q.12017

A stock market invester observes the following for the price of two stocks that he is looking at investing in. The first is increasing in a linear fashion (arithmetic) Stock A: $a_n = 4n + 125$ where a_n is the value of th stock and n is the number of years. The second is increasing at an exponenital rate (geometric): Stock B: $a_n = 6(1.008)^{2n-1}$. Assuming these stock values ontinue to increase in the same manner until he cashes them out, which stock option is worth more in 50 years? And how much more is the stock worth per share?

Question #21

Reference Q.50860

The designs are being made for a concert hall. The front row will have four seats, and each successive row will have two seats added, according to the following diagram:



a. For the first six rows, write the number of seats in each row as a sequence.

b. Write the number of seats in each row as a recursive formula.

c. Using the recursive formula, determine the number of seats in the eighth row.

Question #22

Reference Q.50863

You want to start saving up for a new video game. You have $30 given to you for your birthday and you plan on saving $5/week from your allowance.

a. Write the amount of money you have each week as a sequence.

b. Write the amount you have saved each week as a recursive formula.

c. The game you want costs $60. Using the recursive formula, determine how long before you have enough to buy it.

Question #23

Reference Q.50866

There are 40 mice in a particular area and their population is doubling every month.

a. Write the population of the mice as a sequence of numbers.

b. Write the population as a recursive formula.

c. Using the recursive formula, determine the population after seven months.

Question #24

Reference Q.50869

A mother is pushing their child on a swing until they reach a height of 6.2 feet and then they stop pushing. With each successive swing with no pushing, the child's max height decreases by 18%.

a. Write the recursive formula that will represent the height of the child.

b. Using the recursive formula, determine how many swings the child will make to drop below a height of 3 feet.