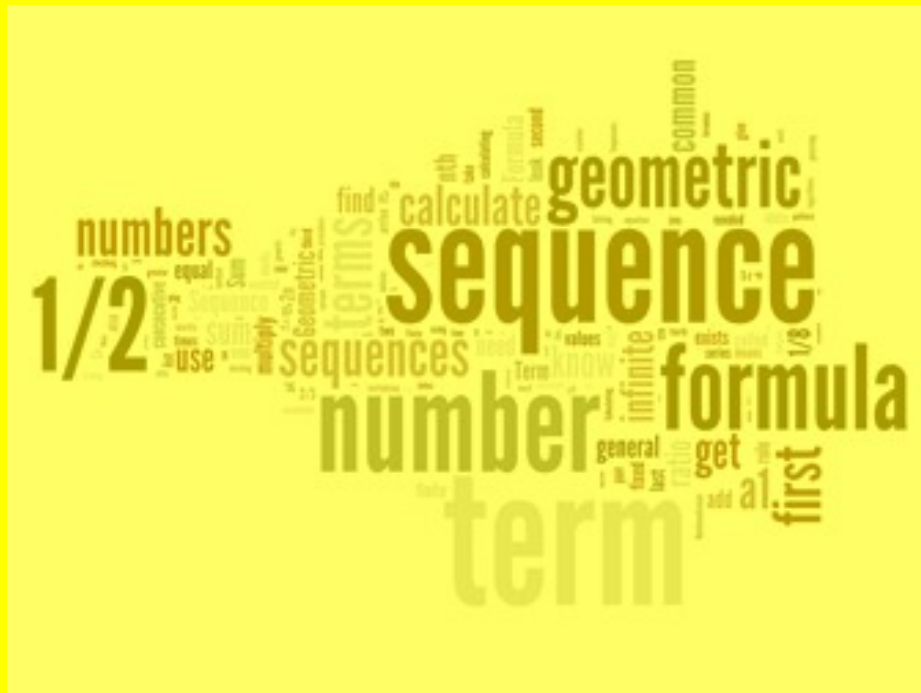


HAT

3/14/18

Chapter 10 REVIEW



In honor of Pi Day...

Use summation notation to express this series.

$$\pi = 4 \left(1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} + \frac{1}{9} - \dots \right)$$

Write the explicit formula for the arithmetic sequence if

$$c_3 = 42$$

$$c_8 = 2$$

If $r = 4$ and $a_6 = 196$, find the first term of the sequence

Write the recursive equation.

$$a_n = 3n - 18$$

$$t_n = \frac{2}{5^{n-1}}$$

Write the explicit definition for each sequence.

$$\begin{cases} a_1 = 2 \\ a_{k+1} = 3a_k \end{cases}$$

$$\begin{cases} t_1 = 1 \\ t_{k+1} = 2t_k + 1 \end{cases}$$

Find d , given

$$a_1 = -11 \quad S_{10} = 520$$

Write each series in summation notation and evaluate the sum if possible.

$$7 + 13 + 19 + \dots + 73$$

$$17.5 + 5 - 7.5 + \dots - 70$$

$$\frac{3}{2} - \frac{3}{4} + \frac{3}{8} - \dots$$

$$16 + 12 + 9 + \dots + \frac{2187}{1024}$$

Find the three arithmetic means between $\frac{1}{5}$ and $\frac{13}{15}$.

Find the four geometric means between 2430 and 10.

Write each series using summation notation.
Then find the sum.

$$2 + \frac{2}{3} + \frac{2}{9} + \dots + \frac{2}{6561}$$

$$20 - 16 + \frac{64}{5} - \frac{256}{25} + \dots$$

Write the explicit and recursive formulas for each sequence:

2, 4, 10, 28, 82

-1, 6, 17, 32, 51

Find the 3 geometric means between

$$-4 \quad \text{and} \quad -\frac{4}{625}$$

Expand and find the sum.

$$\sum_{k=-2}^2 (3k - k^2)$$

True or False? The following recursive definitions will generate the same sequence.

$$\begin{cases} a_1 = 5 \\ a_{n+1} = a_n - 2 \end{cases} \quad \begin{cases} c_1 = 5 \\ c_n = c_{n-1} - 2 \end{cases}$$

Given $S_\infty = \sum_{n=1}^{\infty} \frac{3}{4^n}$, find S_5 and S .

Write the explicit formula for each sequence.
Find S_5 and S , if possible.

$$\begin{cases} a_1 = 5 \\ a_{n+1} = 4a_n \end{cases}$$

$$\begin{cases} a_1 = -7 \\ a_n = a_{n-1} - 6 \end{cases}$$

Write the explicit and recursive definitions for each sequence.

$-29, -20, -11, -2, \dots$

$4, 9, 16, 25, \dots$

You invest \$3000 in an account that pays 4% annual interest compounded monthly. You withdraw \$500 from this account each month.

Write a recursive formula to represent this situation.

Find the balance in this account after 2 months.

Joe starts with \$500. Sam starts with \$200. At the end of each month, Joe gives Sam one-third of his money and Sam gives Joe one-third of his money.

Write recursive equations to represent this situation.

How much will each have after two months?

A particular bacteria culture initially contains 400 cells. Every hour 40% of the cells die due to exposure to an enzyme. At the end of each hour, the lab technicians add 50 cells to the culture.

Find the number of bacteria cells after 8 hours.

Do the number of bacteria cells seem to level off (or approach a limit)?

Each vial can only support 100 bacteria cells. Will the vials be large enough to support the bacteria cell samples? If not, determine the restocking number needed to maintain a limit of 100 bacteria cells.

March 13, 2018

