

Homework Questions...

⑫ $\sum_{k=3}^{22} 2k-1$ $\frac{2(3)-1}{5}$ $\frac{2(22)-1}{43}$

$\frac{20(5+43)}{2}$ $\frac{10(48)}{480}$

May 9-7:22 AM

Handwritten notes showing a number line from 35000 to 65000 with an arrow labeled 50. Below the line are numbers -3, -2, 0, 11, 12, 13. To the left is $100 - .15$. A circle around 8400 is labeled "Tires". To the right is $10000(-.84)$ and "84%".

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11.3 Geometric Series

Geometric: multiplication by the same number for each term in a sequence

Common Ratio: the # you multiply by
r

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3, 9, 27, 81

$\checkmark \checkmark \checkmark$
 $\times 3 \times 3 \times 3$

3^3
 $a_1 (r)^{n-1}$

How many terms? 4
How many times did you multiply by 3? 3
100th term 99
nth term n-1

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Explicit Formula:
 $a_n = a_1(r)^{n-1}$

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Find the common ratio, the explicit formula, and the 8th term -2, 10, -50, 250...

r: -5

explicit formula: $a_n = -2(-5)^{n-1}$

8th term: $a_8 = -2(-5)^{8-1}$
 $-2(-5)^7$
 156250

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Example 1: -2, 10, -50, 250, ...

r:

$a_n =$

$a_8 =$

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Example 2: -1, -4, -16, -64, ...

r: 4

$a_n = -1(4)^{n-1}$

$a_8 = -1(4)^{8-1}$

-16384

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Write each series in sigma notation

- explicit formula
- lower limit first term = formula
- upper limit last term = formula

\sum

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Example 3: 3 - 9 + 27 - 81

- $3(-3)^{k-1}$
- $\frac{3}{3} = \frac{3(-3)^{k-1}}{3} \quad | = (-3)^{k-1} \quad (\log_{-3}) = k-1$
- $\frac{-81}{3} = \frac{3(-3)^{k-1}}{3} \quad -27 = (-3)^{k-1}$

$k=1 \quad 0 = k-1$
 $+1 \quad +1$

$\log_{-3}(-27) = k-1$

$\log_{-3}(-27) = k-1$
 $+1 \quad +1$
 $k=4$

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$\sum_{k=1}^4 3(-3)^{k-1}$

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Example 4: -3 - 6 - 12 - 24

- $-3(2)^{k-1}$
- $-\frac{3}{3} = \frac{-3(2)^{k-1}}{3} \quad -1 = \frac{-3}{3}$

$2^{k-1} = 1$

$\log_2 1 = k-1$

$0 = k-1$
 $+1 \quad +1$
 $k=1$

$\sum_{k=1}^4 -3(2)^{k-1}$

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