

Quiz 1-4 Key

Tuesday, October 14, 2008
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Precalculus Quiz 4-3 12.1-12.3

Name: Key Per: _____
October 10, 2008

In 1-2, (a) identify the sequence as arithmetic, geometric, or neither, and (b) give a formula for the n th term.

1. 16, 11, 6, 1,

Type: Arithmetic

Term: $16 + -5(n-1)$

2. $\frac{1}{2}, \frac{3}{6}, \frac{5}{18}, \frac{7}{54}, \dots$

Type: Neither (Arithmetic over Geometric)

Term: $\frac{2n-1}{2 \cdot 3^{n-1}}$

3. An arithmetic sequence has $a_2 = 4$ and $a_6 = 10$.

a. Find a formula for a_n .

$$d = \frac{10 - 4}{6 - 2} = \frac{6}{4} = \frac{3}{2}; a_1 = a_2 - d = \frac{5}{2}; a_n = \frac{5}{2} + (n-1) \cdot \frac{3}{2}$$

b. Write an expression you could type into a \$5 calculator for the 10th partial sum of the sequence.

Either $10 \cdot \frac{5}{2} + \frac{10 \cdot 9}{2} \left(\frac{3}{2}\right)$

OR $10 \cdot \left(\frac{5/2 + 13}{2}\right)$ ($13 = a_{10}$)

4. Give the first three terms of the sequence whose recursive formula is

$$\begin{cases} a_1 = 6 \\ a_n = 12 - \frac{a_{n-1}}{2} \end{cases}$$

Term 1: 6

Term 2: 9

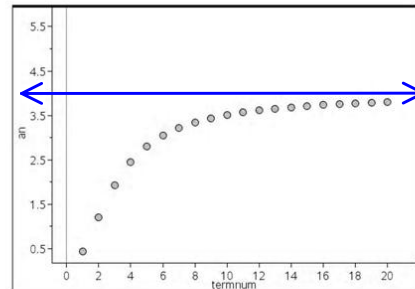
Term 3: $\frac{15}{2}$

$$12 - \frac{6}{2} = 9$$

$$12 - \frac{9}{2} = \frac{15}{2}$$

5. Based on the graph at right, evaluate $\lim_{n \rightarrow \infty} a_n$.

About 4 (clearly larger than 3.5)



In 1-2, (a) identify the sequence as arithmetic, geometric, or neither, and (b) give a formula for the n th term.

1. 16, 13, 10, 7, ...
Type: Arithmetic
Term: $16 - 3(n-1)$

2. $\frac{1}{2}, \frac{3}{10}, \frac{5}{50}, \frac{7}{250}, \dots$
Type: Neither ($\neq \frac{1}{6}$)
Term: $\frac{2n-1}{2 \cdot 5^{n-1}}$

3. An arithmetic sequence has $a_2 = 8$ and $a_6 = 10$.

a. Find a formula for a_n .
$$\left. \begin{aligned} d &= \frac{10-8}{6-2} = \frac{2}{4} = \frac{1}{2} \\ a_1 &= a_2 - d = 7\frac{1}{2} \end{aligned} \right\} a_n = 7\frac{1}{2} + \frac{1}{2}(n-1)$$

b. Write an expression you could type into a \$5 calculator for the 10th partial sum of the sequence.

Either $10(7\frac{1}{2}) + \frac{10 \cdot 9}{2} \cdot \frac{1}{2}$
or $10 \left(\frac{7\frac{1}{2} + 12}{2} \right)$ ($a_{10} = 12$)

4. Give the first three terms of the sequence whose recursive formula is

$\begin{cases} a_1 = 6 \\ a_n = 18 - \frac{a_{n-1}}{2} \end{cases}$ Term 1: 6 Term 2: 15 Term 3: $10\frac{1}{2}$ or $21\frac{1}{2}$
 $18 - \frac{6}{2}$ $18 - \frac{15}{2}$

5. Based on the graph at right, evaluate $\lim_{n \rightarrow \infty} a_n$.

$\lim_{n \rightarrow \infty} a_n \approx 3$

