

Name: _____

Show work needed to justify your answer.

Date: _____

HW: # 17: Math IBSL - Standard 17 - Number Patterns and Sigma Notation

5 points

1. For each of the following sequences, find an expression for the general term and state whether the sequence is arithmetic, geometric or neither:

a 10, 50, 250, 1250

c $\frac{1}{3}, -\frac{1}{9}, \frac{1}{27}, -\frac{1}{81}, \dots$

f -12, -36, -108, -324, ...

Arithmetic: $u_n = d(n-1) + u_1$
 Geometric: $u_n = u_1 \cdot r^{n-1}$

(a) Geometric: $u_n = 10 \cdot 5^{n-1}$
 (c) Geometric: $u_n = \frac{1}{3} \cdot \left(-\frac{1}{3}\right)^{n-1}$

(f) geometric
 $u_n = -12 \cdot 3^{n-1}$

2. Find the first five terms for each of the following recursive sequences.

b $u_n = \frac{-2}{u_{n-1}}, u_1 = 3$

c $u_n = 2(u_{n-1})^2, u_1 = -1$

d $u_n = 3u_{n-1} + 5, u_1 = m$

b) $3, -\frac{2}{3}, 3, -\frac{2}{3}, 3$

c) -1, 2, 8, 128, 32768

d) $m, 3m+5, 9m+20, 27m+65, 81m+200$

3. For each of the recursive sequences below, find a recursive formula for the general term.

b 1, 4, 16, 64, ...

c 52, 5.2, 0.52, 0.052, ...

d 14, 19, 24, 29, ...

b) $u_n = 4 \cdot u_{n-1}$

c) $u_n = \frac{1}{10} u_{n-1}$

d) $u_n = u_{n-1} + 5$