Sequences and Series HWK Day 1 name _____

1. Determine the number of terms in the series:

   a) $\sum_{k=1}^{7} 2(3)^{k-1}$ b) $\sum_{k=4}^{20} 4(\frac{1}{2})^{k-1}$ c) $\sum_{k=-3}^{10} 2^{k-5}$

2. Determine the given term of the series:

   $\sum_{k=3}^{5} 2(3)^{k-1}$

   a) Find t_1 b) Find t_2

3. Evaluate the following using a calculator:

   a) $\sum_{i=1}^{6} 5(\frac{1}{3})^{i-1}$ b) $\sum_{m=8}^{20} \frac{1}{16}(2)^{m}$

   c) $\sum_{k=-2}^{5} 4(3)^{k-1}$

4. Expand the following:

   a) $\sum_{k=1}^{5} 5(-2)^{k-1}$ b) $\sum_{k=4}^{7} 3(\frac{1}{2})^{k-2}$

5. Solve the following:

   $\sum_{k=2}^{5} \log_x k = 2$

6. Evaluate:

   a) $\sum_{k=3}^{5} \log_k k$ b) $\sum_{k=3}^{4} \log_{12} k^2$

7. Write the following using sigma notation:

-2 + 4 – 8 + 16 …+ 1024

8. Find the first 5 terms determined by the following recursion formulas.

a) $a_1 = 3$
$a_n = a_{n-1} + 2$

b) $a_1 = 3$
$a_n = a_{n-1} - 2$

c) $a_1 = 1$
$a_n = 2a_{n-1} + 4$

d) $a_1 = 0$
$a_n = 3a_{n-1}$

9. Find a recursive formula for each of the following sequences.

a) 5, 6, 7, 8, …

b) 2, 8, 32, 128, 512, …