Sequences and Series Practice   Name _____

I. Find the next four terms of each sequence and write the equation for the nth term.

    1) 1000, 500, 250, 125, … _____ , _____ , _____ , _____ $a_n =$ _____

    2) 6, 18, 54 …   _____ , _____ , _____ , _____ $a_n =$ _____

II. Given the explicit formula for the sequence, find the first five terms and the named term in the problem.

    1) $a_n = 10\left(\dfrac{3}{4}\right)^{n-1}$ _____ , _____ , _____ , _____ , _____

        $a_{23} =$ _____

    2) $a_n = 3^{n-1}$ _____ , _____ , _____ , _____ , _____

        $a_{18} =$ _____

III. Given the first term and the common ratio of a *geometric* sequence find the first five terms and the explicit formula.

    1) $a_1 = 1$, $r = 2$ _____ , _____ , _____ , _____ , _____

        $a_n =$ _____

IV. Given a term and the common ratio of a *geometric* sequence find the first five terms and the explicit formula.

    1) $a_5 = -\dfrac{16}{27}$, $r = \dfrac{2}{3}$ _____ , _____ , _____ , _____ , _____

        $a_n =$ _____

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V. Find the first five terms using the given recursive formula then write the general rule.

1) $a_1 = -2$
   $a_{k+1} = 5a_k$

   ___ , ___ , ___ , ___ , ___

VI. Evaluate each series.

1) $\displaystyle\sum_{n=1}^{8} 4(5)^{n-1}$

2) $\displaystyle\sum_{n=1}^{\infty} 2(.5)^{n-1}$

VII. Rewrite each series using sigma notation.

1) $8 + 16 + 32 + 64 + 128 + 256 + 512$

2) $12 + 6 + 3 + 1.5 + .75$

VIII. Evaluate each geometric series.

1) $\displaystyle\sum_{n=1}^{31} 2(1.2)^{n-1}$

2) $-3 + -6 + -12 + -24 \ldots$

3) $a_1 = -4,\ a_n = -31104,\ r = 6$