Algebra 2, Unit 1.3

Name _____

Geometric Series Practice

Date _____

Evaluate each geometric series described.

1) $2-4+8-16\ldots,\ n=9$

$S_n = \frac{a_1 - a_1 \cdot r^n}{1-r}$

$\frac{2-2(-2)^9}{1--2}$

342

2) $4+2+1+\frac{1}{2}\ldots,\ n=6$

$\frac{63}{8}$

3) $1.25-5+20-80\ldots,\ n=8$

-16383.75

4) $\frac{3}{2}-\frac{3}{4}+\frac{3}{8}-\frac{3}{16}\ldots,\ n=6$

$\frac{63}{64}$

5) $a_1=-3,\ a_{10}=-59049,\ r=3$

-88572

6) $a_1=-2,\ a_8=4374,\ r=-3$

3280

7) $a_1=-4,\ a_8=512,\ r=-2$

340

8) $a_1=-3,\ a_9=-19683,\ r=3$

-29523

9) $a_1=-2,\ r=4,\ n=7$

-10922

10) $a_1=-2,\ r=-3,\ n=9$

-9842

11) $a_1=1,\ r=2,\ n=9$

511

12) $a_1=-3,\ r=-2,\ n=9$

-513

13) $\sum_{k=1}^{7}(-5)^{k-1}$

13021

14) $\sum_{n=1}^{7}5^{n-1}$

19531

15) $\sum_{i=1}^{10}0.4\cdot5^{i-1}$

976562.4

16) $\sum_{n=1}^{7}3\cdot2^{n-1}$

381

17) $\sum_{k=1}^{10}3\cdot\left(\frac{1}{2}\right)^{k-1}$

$\frac{3069}{512}$

18) $\sum_{m=1}^{9}-2\cdot\left(\frac{1}{2}\right)^{m-1}$

$-\frac{511}{128}$

Express each geometric series in sigma notation. What is the sum of the finite series?

19) $-1-4-16-64\ldots,\ n=9$

-87381 $\sum_{n=1}^{9}-1\cdot4^{n-1}$

20) $-1-5-25-125\ldots,\ n=6$

-3906 $\sum_{n=1}^{6}-1(5)^{n-1}$

21) $-1-4-16-64\ldots,\ n=8$

-21845 $\sum_{n=1}^{8}-1\cdot4^{n-1}$

22) $128+64+32+16\ldots,\ n=7$

254 $\sum_{n=1}^{7}128(1/2)^{n-1}$

23) $3-15+75-375\ldots,\ n=7$

39063 $\sum_{n=1}^{7}3\cdot(-5)^{n-1}$

24) $-4-\frac{8}{3}-\frac{16}{9}-\frac{32}{27}\ldots,\ n=9$

$-\frac{76084}{6561}$ $\sum_{n=1}^{9}-4(2/3)^{n-1}$