Secondary Math 3 Name_____

11.3 Arithmetic and Geometric Series

Date_____ Period____

Evaluate the related arithmetic series of each sequence.

1) 17, 23, 29, 35, 41

2) −2, 0, 2, 4, 6, 8

Evaluate each geometric series described.

3) $-2 + 4 - 8 + 16..., \ n = 9$

4) $1 + 2 + 4 + 8..., \ n = 6$

Evaluate each geometric and arithmetic Series

5) $3 - 12 + 48 - 192..., \ n = 8$

6) 31, 41, 51, 61, 71, 81

7) $3 - 6 + 12 - 24..., \ n = 6$

8) 0, 10, 20, 30, 40

Evaluate each arithmetic series described.

9) $\sum_{i=4}^{9} (-2i - 2)$

10) $\sum_{m=5}^{19} (13 - 8m)$

11) $\sum_{m=4}^{15} (6m - 7)$

12) $\sum_{m=3}^{11} (10m - 1)$

Find the sum of the finite geometric series

13) $\sum_{m=1}^{7} 0.5 \cdot 4^{m-1}$

14) $\sum_{n=1}^{8} \left(-\frac{3}{4}\right)^{n-1}$

Evaluate each arithmetic and geometric series described.

15) $\sum_{i=1}^{9} 3^{i-1}$

16) $\sum_{i=1}^{10} -4 \cdot 2^{i-1}$

17) $\sum_{k=1}^{7} 6^{k-1}$

18) $\sum_{n=1}^{10} 2 \cdot (-2)^{n-1}$

Write each arithmetic series in summation notation.

19) $500 + 490 + 480 + ... + 261 + 268$

20) $1 + 5 + 9 + ... + 41 + 45$

Use a graphing calculator to find the sum of each series

21) $\sum_{n=1}^{20} (n^3 - 10n^2)$

22) $\sum_{n=5}^{25} (n^2 - 14n + 32)$

23) The supermarket displays cans in a triangle with two cans in the top row.
a) Write an explicit formula for the sequence of the number of cans.

b) Use summation notation to write the related series for a triangle with 10 cans in the bottom row

c) Suppose the triangle had 17 rows. How many cans would be in the 17th row?

24) You are trying to save $1500. You begin with $5 and save $3 more than the previous amount each week for 30 weeks. Will you meet your goal? Explain and show your work.

Determine if each geometric series converges or diverges. If it converges, what is the sum?

25) $\frac{16}{81} - \frac{8}{27} + \frac{4}{9} - \frac{2}{3} ...$

26) $\frac{3}{2} - \frac{3}{10} + \frac{3}{50} - \frac{3}{250} ...$

27) $250 + 50 + 10 + 2...$

28) $\sum_{m=1}^{\infty} -1250 \cdot \left(\frac{1}{5}\right)^{m-1}$

29) $\sum_{n=1}^{\infty} -3 \cdot (-2)^{n-1}$

30) $\sum_{m=1}^{\infty} -1.9 \cdot 2.5^{m-1}$