Honors Algebra2 **Name** _____

WS12.4 **Hour** _____

Determine if the sequence is geometric. If it is, find the common ratio.

1. −1, 6, −36, 216, ...

2. −1, 1, 4, 8, ...

3. 4, 16, 36, 64, ...

4. −3, −15, −75, −375, ...

5. −2, −4, −8, −16, ...

6. 1, −5, 25, −125, ...

The following problems include given information from geometric sequences:

Find the first five terms and the 20th term

7. $a_n = 2 \cdot \left(\frac{1}{4}\right)^{n-1}$

8. $a_n = -4 \cdot 3^{n-1}$

Find the common ratio, the first five terms and the explicit formula

9. $a_n = a_{n-1} \cdot 2$
$a_1 = 2$

10. $a_n = a_{n-1} \cdot -3$
$a_1 = -3$

11. $a_n = a_{n-1} \cdot 3$
$a_1 = -3$

Find the recursive formula and the next three terms in the sequence.

12. $a_1 = -4,\ r = 6$

13. $a_1 = 0.8,\ r = -5$

Find the 8th term, the recursive formula and the explicit formula.

14. $a_4 = -12$ and $a_5 = -6$

15. $a_5 = 768$ and $a_2 = 12$

16. $a_1 = -2$ and $a_5 = -512$

17. $a_5 = 3888$ and $a_3 = 108$

Evaluate each geometric series.

18. $\sum_{k=1}^{7} 4^{k-1}$

19. $\sum_{n=1}^{8} 2 \cdot (-2)^{n-1}$

20. $\sum_{n=1}^{10} 4 \cdot (-3)^{n-1}$

21. **2 – 10 + 50 – 250..., *n* = 8**

22. **–3 – 6 – 12 – 24..., *n* = 9**

23. **1 – 5 + 25 – 125..., *n* = 7**

24. $a_1 = 4,\ a_n = 1024,\ r = -2$

25. $a_1 = 4,\ a_n = 8748,\ r = 3$

Determine the number of terms *n* in each geometric series.

26. $a_1 = -2,\ r = 5,\ S_n = -62$

27. $a_1 = -3,\ r = 4,\ S_n = -4095$

28. $\sum_{m=1}^{n} -2 \cdot 4^{m-1} = -42$

29. $-4 + 16 - 64 + 256\ldots,\ S_n = 52428$

Book work: p.896 (43 – 47all, 52 – 54all)