

Name: \_\_\_\_\_  
Date: \_\_\_\_\_  
Class: \_\_\_\_\_

Algebra  
Unit 6  
HW 6-9

1) Using  $a_1 = 5$  and  $a_n = a_{n-1} + 3$  find the first 4 terms and create a linear equation that could be used in place of this recursive series. What would  $a(20)$  be?

2)  $2, 6, 18 \rightarrow$  What is the common ratio and what would the next two terms be?

3)  $4, -20, 100 \rightarrow$  What is the common ratio and what would the next two terms be?

4) If you were given the following two options for winning a lottery jackpot, which would you choose to get the largest amount of money on the 30<sup>th</sup> day? Option 1 pays \$500 the first day, \$1000 the 2<sup>nd</sup>, \$1500 the 3<sup>rd</sup>, etc up to the 30<sup>th</sup> day. Option 2 pays \$0.01 the first, \$0.02 the 2<sup>nd</sup>, \$0.04 the 3<sup>rd</sup>, etc up to the 30<sup>th</sup> day. Create an appropriate equation for each and solve for the amount received on the 30<sup>th</sup> day.

5) Graph the first 6 terms of  $a_1 = 16$  and  $a_n = a_{n-1} \cdot \frac{1}{2}$

6) In a geometric sequence the first term is 5 and the second term is 20, what would the 6<sup>th</sup> term in this sequence be? Create a function,  $f(t)$ , for this sequence.

7) You start out a new training program running 1 mile per workout for the first week. At the start of the 2<sup>nd</sup> week you double the distance you run, and double it again at the start of the 3<sup>rd</sup> week. How many miles would you be running per workout during the 4<sup>th</sup> week? If you were to continue this trend, what week would you be forced to run 64 miles per workout?

8) Simplify:  $\frac{2d^{-2}e^4f^3g}{10d^4ef^{10}g^{-6}}$