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DATE: 08/24/2017

ASSIGNMENT: Paper Preview 1 (Sequences and Series)

Sum of arithmetic sequence:
$$S_n = \frac{n}{2}(2u_1 + (n-1)d) = \frac{n}{2}(u_1 + u_n)$$

Find nth term of arithmetic sequence:
$$u_n = u_1 + (n-1)d$$

Find nth term of geometric sequence:
$$u_n = u_1 r^{n-1}$$

$$S_n = \frac{u_1(r^n - 1)}{r - 1} = \frac{u_1(1 - r^n)}{1 - r}, \ r \neq 1$$

Sum of geometric sequence:

$$S_{\infty} = \frac{u_1}{1-r}, |r| < 1$$

- 1.) The sum of the first 20 terms in an arithmetic sequence is -520. If the 7^{th} term is -5, find u_1 and d. [6 marks] [SL-calc]

- 2.) For the sequence -5, -5, -5, -5 ... find $\sum_{n=1}^{\infty}$ and the expression for the nth term. [6 marks] [SL-calc]

3.) The sum of the first 11 terms in a geometric 0.2, what is the common ratio and u_6 ?	c sequence is 14,511,882.2. If the first term is [SL-calc]
4.) If $u_5 = 7$ and $u_{15} = -53$, find d, u_1 , and S_{20} .	[SL-calc]

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5.) Let $u_n = 11 - 4n$.	[SL-calc]
a. Write down the value of u ₁ , u ₂ , and u ₃ .	
b. $\sum_{n=1}^{20} (11 - 4n)$	
6.) Kai is building a miniature model of Yankee Stadecides to change the seating structure. He wants have 9 seats, the next row to have 16, and so on.	s the first curved row behind home plate to
a. Calculate the number of seats in the 41st row.b. Calculate the number of seats in the stadium if	there are 119 rows.

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7.) For the sequence a, 2a, a – 6, find the value of	of "a" that makes the sequence arithmetic. [SL non-calc]
8.) For the sequence b, 2b, 4b, find all values of "	b" that makes the sequence geometric. [SL non-calc]

Answer key: show all calculations for full marks.

1.)
$$u_1 = 31$$
; $d = -6$

3.)
$$r = 6$$
, $u_6 = 1,555.2$

4.)
$$d = -6$$
, $u_1 = 31$, $S_{20} = -520$

5.)
$$\sum_{n=1}^{20} -620$$

- 7.) Use inductive or deductive reasoning.
- 8.) You must find all values of "b."