

Name: \_\_\_\_\_ Period: \_\_\_\_ Due Date: January 28, 2019

(MATH 4/5 H)

### Sequences & Series Homework #3

**Directions: Solve the equations.**

1.  $x^2 - 9x + 5 = -9$

2.  $3s^2 - 5s + 1 = s^2$

**Directions: Determine what type of sequence each is (arithmetic or geometric), write an explicit formula for each sequence, and find the 15<sup>th</sup> term of each sequence.**

1. 2, 6, 10, ...

2. 0.2, 0.02, 0.002, ...

This sequence is \_\_\_\_\_

This sequence is \_\_\_\_\_

because \_\_\_\_\_

because \_\_\_\_\_

\_\_\_\_\_.

\_\_\_\_\_.

**Directions: Calculate  $S_{15}$  for each sequence.**

1. 32768, 16384, 8192, 4096, 2048, ...

3. 2, -4, 8, -16, ...

2. -10, -6, -2, 2, ...

4. 3, 6, 9, 12, ...

**Directions: Calculate the sum of each infinite series.**

1. 1, 2, 3, 4, ...

3. 2, 4, 8, 16, ...

2.

$$\sum_{i=1}^{\infty} (4)^i$$

4.

$$10 \sum_{i=1}^{\infty} \left(\frac{1}{3}\right)^i$$

**Directions: Answer each of the application problems using a sequence or series formula.**

1. A local grocery has an opening for a new team member that pays \$11.00 per hour with a yearly raise of \$0.25 per hour. After how many years would Nathan be paid \$25 per hour (NO MINIMUM WAGE INCREASES)? Explain how you know and show your work.

2. Celia is considering the following data plan for her mobile phone. She will not choose the plan if it costs more than \$170 in the 10<sup>th</sup> year. Help Celia decide whether she should choose this plan or not. Explain how you decided and show your work.

Years	1	2	3	4
Cost (\$)	\$120.00	\$124.80	\$129.79	\$134.98

3. Ayden bought a new car. He learned that the wear on the motor is due to the number of hours the car is in use. Determine how many hours the car is in use in the first 6 months. Explain how you know and show your work.

Months	1	2	3	4
Number of Hours Used During the Month	21	32	43	54