Hon Pre-Calc Quiz 9.1 – 9.3 *2017 – 2018*

Show All Work!! Circle Final answers!!

1. Write an explicit expression for the apparent n^{th} term of the sequence. {3, 11, 3, 11, 3, 11, 3, 11,…

2. Simplify: $\frac{(4n+17)!}{(4n+19)!}$

3. Use sigma notation to write the following sum.
$2 + 6 + \frac{18}{2} + \frac{54}{6} + \frac{162}{24} + \cdots + \frac{28697814}{1.30767\ x\ 10^{12}}$

4. Find the sum of the multiples of 4 from 24 + … + 12876.

5. How many terms are in the following series?
$-7 - 1 + 5 + 11 + \cdots + k = 4400$

6. If a_n is an arithmetic sequence where $a_4 = 8$ and $a_{20} = 56$, find k if $\sum_{n=7}^{k} a_n = 3586$

7. If $|x| < 1$, find the sum S of the series:
$S = 2 + 5x + 8x^2 + 11x^3 + 14x^4 + \cdots$

8. Suppose a display of cans in a supermarket is built with one can on top, three cans in the next row, followed by 6 cans in the third row, ten cans in the next row, etc. How many cans are in the 50^{th} row of the display?

9. From two towns 637 miles apart, Jack and Jill set out to meet each other. If Jill travels 3 mile the first day, 6 the second, 9 the third, and so on, and jack travels 4 miles the first day, 8 the second, 12 the third, and so on, when will they meet?

10. A side of an equilateral triangle is π inches long. A second equilateral triangle is inscribed in it by joining the midpoints of the sides of the first triangle. The process is continued. Find the perimeter of the 11^{th} inscribed triangle in reduced fraction form.

11. Filled to capacity, a tank contains 30 gallons of pure antifreeze. Three gallons of liquid are drawn out and the tank is filled with water. If this operation is repeated several times, after how many operations will there be less than 1 gallon of pure antifreeze left in the tank?

12. A ball is dropped from a helicopter hovering at 3,000 feet. If the ball retains 80% of its previous height after each bounce, find the following:

a) Find the first bounce for which the ball will be under 5 feet.

b) The height of the ball after it has traveled a total vertical distance of 20,000 feet.