1. Determine whether each sequence is arithmetic, geometric, or neither.

(a) 5, -3, -12, -22, -33, …

(b) $\frac{1}{5}$ , $\frac{7}{10}$ , $\frac{6}{5}$ , $\frac{17}{10}$ , $\frac{11}{5}$ , …

2. The population of Jamesburg for the years 2010 - 2013, respectively, was reported as follows:

250,000 250,937 251,878 252,822

How can this sequence be recursively modeled?

(1) $j_n = 250{,}000(1.00375)^{n-1}$

(2) $j_n = 250{,}000 + 937^{(n-1)}$

(3) $j_1 = 250{,}000$
$j_n = 1.00375j_{n-1}$

(4) $j_1 = 250{,}000$
$j_n = j_{n-1} + 937$

3. Brian deposited 1 cent into an empty non-interest bearing bank account on the first day of the month. He then additionally deposited 3 cents on the second day, 9 cents on the third day, and 27 cents on the fourth day. What would be the total amount of money in the account at the end of the 20th day if the pattern continued?

(1) $11,622,614.67

(2) $116,226,146.80

(3) $17,433,922.00

(4) $1,743,392,200.00

4. While experimenting with her calculator, Candy creates the sequence 4, 9, 19, 39, 79, … .

(a) Write a recursive formula for Candy's sequence.

(b) Determine the eighth term in Candy's sequence.

5. Find the sum of the following arithmetic series: -15 + (-11) + (-7) + … + 53

6. What are the missing terms in the geometric sequence below?

0.5 , _____ , _____ , _____ , 2048

7. Solve the following system of equations algebraically:

$x^2 + y^2 = 9$
$y = x + 3$