IM9 Section 4.2 Homework Name_____

1.) Determine whether each given sequence is arithmetic, geometric, or neither. Identify the common ratio or common difference if applicable in your justification. Determine the next 3 terms in the sequence.

Example: 4, 8, 12, 16, …

The sequence is arithmetic because there is a common difference of 4 between each term. The next three terms of this arithmetic sequence would be 20. 24. and 28.

a.) 2, 4, 7, 11, …

This sequence is neither arithmetic nor geometric b/c there is no common ratio or common difference between terms.

b.) 3, 12, 48, 192....

The sequence is geometric because there is a common ratio between consecutive terms. The common ratio is 4. The next 3 terms are 768, 3072, and 12,288.

c.) 9, -18, 36, -72, …

The sequence is geometric because there is a common ratio of -2 between them. The next 3 terms are 144, -288, 576

d.) 1.1, 1.11, 1.111, 1.1111, …

This sequence is neither arithmetic nor geometric b/c there is no common difference or common ratio between terms

e.) 9.8, 5.6, 1.4, -2.8…

This sequence is arithmetic because there is a common difference of -4.2 between them. The next 3 terms are -7.0, -11.2, and -15.4

f.) 1, ½, ¼, ⅛, …

This sequence is geometric because there is a common ratio of $\frac{1}{2}$ between consecutive terms the next 3 terms are $\frac{1}{16}, \frac{1}{32}, \frac{1}{64}$.

g.) 1, 1, 2, 3, 5, 8,...

This sequence is neither geometric nor arithmetic b/c there is no common ratio or common difference.

2.) Let's suppose the sequence 28, 14, . . . is arithmetic.

a. What is the common difference?

-14

b. List the next 3 terms in the sequence.

$6, -14, -28$

c. Explain how you determined your answers in part (b).

I subtracted 14 from each previous term.

d. Is this sequence finite or infinite? Explain your reasoning.

This sequence is infinite b/c it continues forever.

3.) Let's suppose the sequence 28, 14, . . . is geometric.

a. What is the common ratio?

$\frac{1}{2}$

b. List the next 3 terms in the sequence.

$7, 3.5, 1.75$ or $7, \frac{7}{2}, \frac{7}{4}$

c. Explain how you determined your answers in part (b).

I multiplied each previous term by $\frac{1}{2}$ to get the next term.

d. Is this sequence finite or infinite? Explain your reasoning.

This sequence is infinite b/c it continues forever.