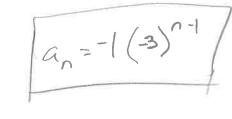
1. Show mathematically whether each of the following sequences is arithmetic, geometric, or neither. If it is arithmetic or geometric, find an explicit equation to model the sequence.

a.
$$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \dots$$
 Neither $\frac{1}{3} + \frac{1}{4} - \frac{1}{3}$

6.
$$-1, 3, -9, 27, \dots$$

Chomenic
$$7 = \frac{3}{-1} = \frac{-9}{3} = \frac{27}{-9} = \begin{bmatrix} -3 \\ -3 \end{bmatrix}$$



c. 5, 8, 11, 14, ...

Arithmetic
$$d=8-5=11-8=14-11=3$$

$$a_n=5+3(n-1)$$

2. Find the 14th term of each sequence. Hint: use the arithmetic equation to help you do this. . .

a. the sequence in part (b) of number 1
$$A_{14} = -1(-3)^{14-1} = 1,594,323$$

b. the sequence in part (c) of number 1

$$a_{14} = 5 + 3(14-1)$$

$$= 5 + 39$$

$$= 444$$

3. Find the missing terms of the arithmetic sequence below algebraically. Show work.

4. In the sequence in problem (3), which term of the sequence is 603?

$$603 = -9.5 + 6.25(n-1)$$

 $612.5 = 6.25(n-1)$
 $98 = n-1$
 $99 = n$

5. $\frac{4428675}{131072}$ is which term of the below sequence? Solve algebraically and show work.

$$\frac{4428675}{131072} = 800(\frac{3}{4})^{-1}$$

$$\frac{800,600,450,...}{13072}$$

$$\frac{800,600,450,...}{13072}$$

$$\frac{800,600,450,...}{13072}$$

$$\frac{131072}{1800} = \frac{3}{4} = 0.75$$

$$\frac{177147}{4194304} = \frac{3}{4}$$

$$\frac{177147}{4194304} = \frac{3}{4}$$

5. Suppose you drop a bounce ball from a certain height and measure the height of each bounce. The sequence of heights is geometric. Find an equation for a sequence that generates the bounce heights of the ball if the height of the 5th bounce is 9 ft and the height of the 7th bounce is 5 ft.

$$\frac{1207}{a_{5}} = \frac{9}{a_{7}}$$

$$\frac{1207}{a_{7}} = \frac{9}{a_{7}}$$

$$\frac{3}{3} = \frac{3}{3} = \frac{3}{3}$$

$$\frac{3}{3} = \frac{3}{3} = \frac{3}{3} = \frac{3}{3}$$

$$= \frac{9}{3} = \frac{81}{25}$$

$$= \frac{729}{25}$$

$$a_{7} = \frac{729}{25} \left(\frac{15}{3}\right)^{7-1}$$