## Chapter 14  Sequences and Series
### Notes 14.2    Arithmetic and Geometric Sequences and Other Sequences

Find the next 3 terms of each sequence.

1.  3, 5, 7, _____, _____, _____                    Formula:

2.  6, 12, 24, _____, _____, _____                    Formula:

3.  3, 9, 27, _____, _____, _____                    Formula:

4.  5, -2, -9, _____, _____, _____                    Formula:

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A **sequence** is function whose domain is the set of positive integers.  $n$ is the term number and $t_n$ is the term value.  (ex #1:   the $1^{st}$ term is 3 so n $= 1$ and $t_n = 3$ )

**Arithmetic sequence**—each term is formed by *adding* a constant to the previous term. (the constant is called the **common difference**)

**Geometric sequence**—each term is formed by *multiplying* the previous term by a constant (called the **common ratio**)

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5. a)  Find the $100^{th}$ term, $t_{100}$, of the sequence 3, 5, 7, …

   b)  Find the term number, n, that 105 is in the sequence 3, 5, 7, …

6. a)  Find the $100^{th}$ term, $t_{100}$, of the sequence 6, 12, 24, …

   b)  Find the term number, n, that 786,432 is in the sequence 6, 12, 24, …

7. You have $40 saved for something. You take on a part-time job that pays $13 per day. Each day you keep track of how much you have.

| Days (n) | $ or $t_n$ |
|---|---|
| 1 | 53 |
| 2 | 66 |
| 3 | 79 |
| 4 | 92 |

a) What kind of sequence is this?

b) How much money would you have after 3 months?

c) How long would it take to save $5000?

8. When you leave money in a savings account, the interest is compounded. Let's say you put $1000 in an account for your baby when it is born and the interest is 6% per year (compounded once a year).

a) What kind of sequence is this? Write a formula.

b) Find the first 3 terms.

c) How much money would there be saved on the 18th birthday?

d) When would that person have $10,000 saved?

9. Type of sequence: Geometric, arithmetic or neither?

| n | $t_n$ |
|---|---|
| 1 | 6 |
| 2 | 12 |
| 3 | 20 |
| 4 | 30 |
| 5 | 42 |