

# Reading Questions 1

## Section 9.1 : Example 1

## Section 9.1 : Example 2

1. A term in a sequence is a number.
2. The sequence  $s_n = \frac{n(n+1)}{2}$  is an infinite list.
3. The next term in the sequence 1, 2, 4, 8, 16, 32, ... is 64.
4. What is the next term in the sequence 3, 6, 9, 12, ...?

## Section 9.1 Sequences (Part 1)

### Review of Sequences

- P 1.** A sequence is a special kind of list. Determine if the list 1, 1, 1, 1, 1 is a sequence.
- P 2.** The  $n$ th term of a sequence can be used to name the sequence without listing the terms of the sequence. What is the  $n$ th term of the sequence 1, 2, 4, 8, 16, ...?
- P 3.** What does it mean for a sequence to be a recursive sequence?
- P 4.** To determine the  $n$ th term of a sequence it is useful to know the first few terms of the sequence in order to find common sequence patterns. For the following sequence write the first six terms and the  $n$ th term of the sequence.

$$s_n = ns_{n-1} \quad \text{where} \quad n \geq 2 \text{ and } s_1 = 1.$$

### Limits of Sequences

- P 5.** What does it mean for a sequence to have a limit?

#### Definition

If a sequence has a limit  $L$  then we say the sequence converges to  $L$ . Otherwise the sequence diverges.

- P 6.** Determine if the sequences converge or diverge. If the sequences converge find the limit. If the sequence diverges state how you came to that conclusion.

1.  $s_n = \frac{n}{n^2+1}$
2.  $a_n = \frac{n^3+2}{n^2+1}$
3.  $b_n = n + \frac{1}{n}$
4.  $c_n = (-1)^n + \frac{1}{n}$

- P 7.** Give a sequence that diverges which contains positive and negative terms. If the signs of the terms alternate then the sequence is called an alternating sequence.