

MEMORIAL UNIVERSITY OF NEWFOUNDLAND

DEPARTMENT OF MATHEMATICS AND STATISTICS

SECTION 1.1

Math 2000 Worksheet

FALL 2018

For practice only. Not to be submitted.

1. Simplify each of the following.

(a) $\frac{(2i)!}{2 \cdot 4 \cdot 6 \cdots (2i)}$

(b) $\frac{2 \cdot 4 \cdot 6 \cdots (2i)}{5 \cdot 10 \cdot 15 \cdots (5i)}$

2. Write the first five terms of the sequence defined by each of the following general terms a_i .

(a) $a_i = \frac{\sin\left(\frac{i\pi}{2}\right)}{i^2}$

(b) $a_i = (-1)^{i+1} \frac{1+i}{i!}$

(c) $a_1 = 4, \quad a_{i+1} = \frac{a_i}{a_i + 2}$

3. Find a formula, indexed from $i = 1$, for the general term a_i of each of the following sequences (assuming that the pattern of the first few terms continues).

(a) $\left\{ \frac{1}{8}, \frac{2}{27}, \frac{3}{64}, \frac{4}{125}, \dots \right\}$

(b) $\{-3, 8, -13, 18, \dots\}$

(c) $\{10, 2, 10, 2, \dots\}$