

CMSC 250 Homework 7 Spring 2006

Due Wed March 15 at the beginning of your discussion section.

1. Write the first four terms of the following sequences.

(a) $2, 1, \frac{4}{5}, \frac{5}{9}$

(b) $0, -8, -162, -3072$

2. Calculate the sum of the first three terms of each sequence from problem 1 both using a calculator and by hand using exact integer and fractional arithmetic.

(a) $2 + 1 + \frac{4}{5} = 3\frac{4}{5}$ (by calculator: 3.8)

(b) $0 + -8 + -162 = -170$

3. Write the product of the first three terms of the sequences from problem 1.

(a) $2 * 1 * \frac{4}{5} = \frac{8}{5}$

(b) $0 * -8 * -162 = 0$

4. For each of the following, change the following sums and/or products in expanded form to summation or product notation.

(a)

$$\sum_{i=1}^3 \frac{(-1)^i(i+1)}{3^i} 2^{4-i}$$

(b)

$$\prod_{i=1}^4 \frac{i^2 + 1}{x^i}$$

(c)

$$\prod_{i=1}^4 \left(\sum_{j=1}^i \frac{(-1)^{j+1}}{j} \right)^i$$