

Math 1720 Homework 14, due Wednesday May 2.
Explain all answers and show all calculations.

(Note: some of the material for this homework will be covered Monday.)

9.1: 63, 66, 59

9.2: 11, 15, 38, 40

9.3: 8, 12, 20, 23, 37

1. Suppose the first few terms of a sequence are

$$3, .6, .12, .2, .04, \dots$$

Is it possible that this sequence is geometric? Explain.

2. Suppose you know the sequence $\{a_n\}_{n=0}^{\infty}$ is geometric, and you're told $a_0 = 6$, $a_3 = 2$, but you're not told a_1 or a_2 . Find the ratio and a formula for a_n , and the sum $\sum_{k=0}^{\infty} a_k$, if it exists.

3(extra credit). (This corrects the last problem from the previous homework, where I wrote $\sqrt[6]{x}$ instead of $\sqrt[6]{|x|}$.) Find

$$\int_{-\infty}^{\infty} f(x) dx$$

where

$$f(x) = \begin{cases} \frac{1}{x^5} & \text{if } |x| > 1 \\ \frac{1}{\sqrt[6]{|x|}} & \text{if } |x| \leq 1. \end{cases}$$

(Exploiting symmetry will help.)