

Math 1b. Series—Geometric Series

Spring 2006

1. Suppose that the country of Pottsylvania spends \$2 billion and that each recipient of a fraction of this wealth spends 90% of the dollars that he or she receives. In turn, the secondary recipients spend 90% of the dollars that they receive, and so on. What is the total spending that results from the original injection of \$2 billion dollars into the economy?

2. Determine the convergence of each of the following geometric series. If the series converges, find its sum.

(a) $1 + 0.4 + 0.16 + 0.064 + \dots$

(b) $\sum_{n=0}^{\infty} \frac{(-6)^n}{5^n}$

(c) $\sum_{n=2}^{\infty} \frac{3^n}{\pi^n}$

3. Express $6.254254\dots$ as a ratio of two integers.

4. A ball is dropped from a height of 6 ft. Each time the ball bounces, it comes back up to one-half of its previous height. What is the total distance that the ball travels?