Math Xb Spring 2004
Worksheet: Geometric Series
February 23, 2004

1. For each of the following geometric series, determine if the series converges or diverges. If it converges, find its sum.

   (a) $1 - 5 + 25 - 125 + 625 - \cdots$

   (b) $\frac{3}{4} + \frac{1}{2} + \frac{1}{3} + \frac{2}{9} + \cdots$

   (c) $e + 1 + \frac{1}{e} + \frac{1}{e^2} + \cdots$

   (d) $7 - 14 + 28 - 56 + \cdots$

   (e) $1.2 + 0.96 + 0.768 + 0.6144 + 0.49152 + \cdots$

2. A manufacturing company that has just located in a small community will pay two million dollars per year in salaries. It has been estimated that 60% of these salaries will be spent in the local area, and 60% of the money spent will again change hands within the community. This process, called the *multiplier effect*, will be repeated ad infinitum. Find the total amount of local spending that will be generated by company salaries.

3. Find a rational number that corresponds to each of the following repeating decimals.

   (a) $10.\overline{5}$

   (b) $5.4\overline{27}$