Practice – 2

Once you feel confident with infinite geometric series, complete problems 1 to 4. Check your answers by going to the Solutions tab in Moodle.

Instructions: Answer each of the following practice questions on a separate piece of paper. Step by step solutions are provided under the Solutions tab. You will learn the material more thoroughly if you complete the questions before checking the answers.

1. Find the sum of the infinite geometric series $6 - 4 + \dfrac{8}{3} - \dfrac{16}{9} + \cdots$.

2. Find the sum of the infinite geometric series $4 + 1 + \dfrac{1}{4} + \dfrac{1}{16} + \cdots$ using

   a. the formula for the sum of an infinite geometric series

   b. $\displaystyle\lim_{n \to \infty} \dfrac{a - ar^n}{1 - r}$

3. An infinite geometric series has $t_1 = 3$ and $t_4 = \dfrac{1}{9}$. Determine the following.

   a. the common ratio

   b. the sum of the series

4. In a research lab, an antibiotic is tested by exposing it to bacteria. Because of the presence of the antibiotic, the number of new bacteria in each new generation is 30% less than the number in the previous generation. If there were initially $24\ 000$ bacteria, determine the total number of bacteria exposed to the antibiotic.