6.1 – 6.4 Review

1. The first term of a geometric series is 3. The sum of the first two terms of a corresponding series is 15 and the sum of the first 3 terms of the series is 63. What is the common ratio?
2. The first term of a geometric series is 81 and the third term is 1. Find the sum to infinity of each of the two possible series.
3. What is the sum of the series $5 + 3 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \cdots + \frac{1}{512}$?
4. Given a geometric sequence with $t_4 = -54$ and $t_7 = 1458$. What is
   a) t_1? b) s_7?
5. $x, x+5, x+9$ are first three terms in a geometric sequence. Determine the exact value of each term.
6. A golf ball is dropped from the top of a building 100 m above a paved road. In each bounce the ball reaches a vertical height that is $\frac{3}{4}$ the previous vertical height.
   a) Determine the vertical height of the ball after the 7th bounce.
   b) the total vertical distance travelled by the ball when it contacts the floor for the 7th time.
7. In a geometric sequence, $t_5 = 1024, r = 4$. What is S_7?
8. The first term of a geometric series is 2 and the sum to infinity is 4. What is the common ratio?
9. Write the series $3 + \frac{3}{2} + \frac{3}{4} + \frac{3}{8} + \frac{3}{16}$ in sigma notation.
10. Determine the value of $\sum_{k=0}^{\infty} 5\left(\frac{1}{3}\right)^k$.

1. r = 4
2. 91.125 or 72.9
3. 9
4. $r = -3, t_1 = 2, s_7 = -29538$
5. -25, -20, -16
6. a)13.35m b) 593.21m
7. 21844
8. 0.5
9. $\sum_{k=0}^{4} 3\left(\frac{1}{2}\right)^k$
10. 7.5