

## Chapter 9.2: Geometric Series

### Calculus II

Spring 2021

College of the Atlantic

1. For each of the following, determine the partial sum  $S_5$  and the sum of the infinite series, if it exists.

$$1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} \dots \quad (1)$$

$$1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} \dots \quad (2)$$

$$1 - \frac{1}{2} + \frac{1}{4} - \frac{1}{8} \dots \quad (3)$$

$$6 - 2 + \frac{2}{3} - \frac{2}{9} + \frac{2}{27} \dots \quad (4)$$

$$5 - 20 + 80 - 320 \dots \quad (5)$$

$$1 + (0.3) + (0.3)^2 + (0.3)^3 + (0.3)^4 + (0.3)^5 \dots \quad (6)$$

$$(0.3) + (0.3)^2 + (0.3)^3 + (0.3)^4 + (0.3)^5 + (0.3)^6 \dots \quad (7)$$

$$(0.3)^7 + (0.3)^8 + (0.3)^9 + (0.3)^{10} + (0.3)^{11} \dots \quad (8)$$

2. Suppose that every year on your birthday you deposit 1000 dollars into a bank account. You first do this on your twentieth birthday. The bank account earns five percent interest compounded annually.
- (a) On the day you turn twenty-five, you make your deposit, as usual. Immediately after making this deposit, how much is in the bank account?
  - (b) How much is in the bank account immediately after making the deposit on your sixtieth birthday?
  - (c) How would your answers change if the interest rate was seven percent instead of five?