Please answer questions 1 - 4 refer to the following recurrence relation.

$B(1) = 3$
$B(n) = 2B(n-1)$ for all $n > 1$

1. Please write the first five terms in the sequence

In [ ]:

2. Write the python cody of a recursive function to solve the relation above

In [ ]:

3. Write a for loop to solve the relation above

In [ ]:

4. Please find the closed form solution using the linear, first-order recurrence relation with constant coefficients formula:

$$S(n) = c^{n-1}S(1) + \sum_{i=2}^{n} c^{n-i}g(i)$$

In [ ]:

Please answer questions 5 - 6 refer to the following recurrence relation.

$S(1) = 3$
$S(n) = S(n-1) + n$ for all $n > 1$

5. Using the formula in Q4, find the closed-form formula for the given recurrence relation.

In [ ]:

6. Simplify the formula in Q5 using summation facts

c. Simplify the formula in c) using summation facts

In [ ]:

Summation Facts

(1) $\sum_{i=m}^{n} c = (n - m + 1)c$

(2) $\sum_{i=m}^{n} ca_i = c \sum_{i=m}^{n} a_i$

(3) $\sum_{i=1}^{n} i = \frac{n(n+1)}{2}$

(4) $\sum_{i=1}^{n} i^2 = \frac{n(n+1))(2n+1)}{6}$

In [ ]: