Please answer questions 1 - 5 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 C++ code of a recursive function to solve the relation above

In [ ]:

In [ ]:

3. Write a C++ for loop to solve the relation above

In [ ]:

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 $n > 1$

In [ ]:

5. Using the formula in Q5, write the formula for the given recurrence relation.

In [ ]:

6. Please simplify the formula you got in Q5 using summation facts

Summation Facts

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

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

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

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

In [ ]: