Identify whether each of the following is recurrence or just a sequence.

- $a_n = 2a_{n-1} + 2$

- $a_n = 2a_{\frac{n}{2}}$

- $a_n = a_{n-2} + a_0$

- $a_n = a_0 + a_1 + a_2$

Solve the following recurrence relations. For the first three, assume $R(0) = 1$, for the last, assume $R(0) = k$:

- $R(n) = 5R(n-1)$

- $R(n) = bR(n-1)$, where b is an integer.

- $R(n) = 5R(n-1) + 1$

- $R(n) = bR(n-1) + k$, where b is an integer, and k is an integer.

For one of these, show your solution is true by plugging in the closed form value of $R(n-1)$ on the right-hand side, and using algebraic steps that end in the closed form for $R(n)$.

Write a recursive function for 1 example from problem 1, and 2 examples from problem 2. Take a screenshot of the code, and include it in your submission.

Try solving the problem 1 relation by inputting different values of n into your code. Do you believe there's a closed form solution? If so, what is it?

Compare your solution to the problem 2 relations by testing multiple n values with your code. Does your closed form line up with your code?