Problem 1: Fibonacci Series Generation

Write a function generateFibonacci that takes an integer n and returns the first n numbers in the Fibonacci sequence. Use a loop to generate the sequence. Example: print(generateFibonacci(7)); // Output: [0, 1, 1, 2, 3, 5, 8]

Problem 2: Fibonacci Sum

Create a function sumFibonacci that takes an integer n and returns the sum of the first n numbers in the Fibonacci sequence.

Example: print(sumFibonacci(5)); // Output: 7 (0 + 1 + 1 + 2 + 3)

Problem 3: Fibonacci Series with Even Terms Only

Write a function evenFibonacciSeries that takes an integer n and returns the first n even Fibonacci numbers. Use a loop and skip odd terms.

Example: print(evenFibonacciSeries(5)); // Output: [0, 2, 8, 34, 144]

Problem 4: Nth Fibonacci Number

Write a function nthFibonacci that calculates the nth number in the Fibonacci sequence using recursion or a loop.

Example: print(nthFibonacci(7)); // Output: 13

Problem 5: Pyramid Pattern of Numbers

Write a function pyramidPattern that takes an integer n and prints a pyramid of numbers. Each row i contains the number i, repeated i times.

Example: pyramidPattern(4);

// Output: 1

22

333

4444

Problem 6: Right-Aligned Star Pattern

Create a function rightAlignedStars that takes an integer n and prints a right-aligned triangle of stars.

Example: rightAlignedStars(5);

// Output:

```
    *
   **
  ***
 ****
*****
```

Problem 7: Diamond Pattern of Stars

Write a function diamondPattern that takes an integer n and prints a diamond pattern of stars. n represents the width of the widest part of the diamond.

Example: diamondPattern(3);

// Output:

```
  *
 ***
*****
 ***
  *
```

Series Problems Problem

8: Arithmetic Series Sum

Write a function arithmeticSeriesSum that takes three integers: a (the first term), d (the common difference), and n (the number of terms). Calculate the sum of the arithmetic series.

Example: print(arithmeticSeriesSum(1, 3, 5));

// Output: 35 (1 + 4 + 7 + 10 + 13)

Problem 9: Geometric Series Sum

Write a function geometricSeriesSum that takes three integers: a (the first term), r (the common ratio), and n (the number of terms). Calculate the sum of the geometric series.
Example: print(geometricSeriesSum(2, 3, 4)); // Output: 80 (2 + 6 + 18 + 54)

Problem 10: Alternating Series Sum

Create a function alternatingSeriesSum that takes an integer n and calculates the sum of the alternating series: .

Example: print(alternatingSeriesSum(5)); // Output: 3 (1 - 2 + 3 - 4 + 5)