Extra Java Problems

Problem 1

The following function is defined:

```java
public static int[] Q1(int[] arr)
{
        int n = arr.length;
        int arr2[] = new int[n];

        for (int i=0; i<n; i++)
                arr2[i] = arr[n-i-1];

        return arr2;
}
```

Note: the line

```java
        int arr2[] = new int[n];
```

creates a new array of integers of length `n` called `arr2` .

1. What will the function return for the input `[1,0,5,7,2,3]` ?
2. What does the function return in general?

Problem 2

The following function is defined:

```java
public static boolean Q2(int[] arr1, int[] arr2)
{
        if (arr1.length != arr2.length)
                return false;

        boolean condition = true;
        int i = 0;
        while (condition==true && i<arr1.length)
        {
                if (arr1[i] != arr2[i])
                        condition = false;
                i++;
        }

        return condition;
}
```

Follow the code carefully and explain what does the function do.

Problem 3

The Fibonacci sequence $\{F_i\}$ is defined as follows:

$$F_i = F_{i-2} + F_{i-1},$$

with $F_0 = F_1 = 1$.
For example, the first 10 terms of the sequence are

$$1, 1, 2, 3, 5, 8, 13, 21, 34, 55, \ldots$$

1. Write a Java function that takes an integer $n \geq 2$ and returns the first n values of the Fibonacci sequence.
2. **Challange**: Write a **recursive** function that takes an integer $n \geq 0$ and returns the value of F_n.