Question Set 7: GCD, LCM and Fibonacci

Note: Concentrate on Naming Conventions, Readability and Reusability of Functions

Try to find as many Alternate Solutions as possible.

1. Find the HCF or GCD of two given numbers
2. Find the LCM of two given numbers
3. Find the HCF or GCD of three given numbers
4. Find the LCM of three given numbers
5. Print the Fibonacci sequence 0 1 1 2 3 5 8 13 21
6. Program to print the kth Fibonacci number
7. Given a value in the Fibonacci sequence, print the next Fibonacci number

$$F(n+1) = \textbf{round}(\ F(n)\ Phi\ ) \qquad Phi = \frac{\sqrt{5}+1}{2} = 1{\cdot}61803\ 39887\ 49894\ 84820$$

8. Given a value in the Fibonacci sequence, print the previous Fibonacci number.
9. If Fib(0)=0, Fib(1)=1, Fib(i)=N. Given N find i.

$$i \approx \frac{\log(\ N\ ) + {}^{\log(5)}/_{2}}{\log(Phi)}$$

10. Given a positive integer N, find if N is a Fibonacci number.

N is a Fibonacci number if and only if $\mathbf{5\ N^2 + 4}$ or $\mathbf{5\ N^2 - 4}$ is a square number.