Math 3040 Discussion questions, Nov. 1, 2019

Let a, b be positive real numbers. As we did earlier, define a modified Fibonacci sequence by $f_1 = a, f_2 = b$ and $f_{n+2} = f_{n+1} + f_n$ for all $n \ge 1$. Now define $g_n = \frac{f_n}{f_{n-1}}$. Prove that

$$\sum_{n \to \infty} g_n = \frac{1 + \sqrt{5}}{2}.$$