1035-40-606 **Thomas J. Osler*** (`osler@rowan.edu`), Math Department, Rowan University, Glassboro, NJ 08028. *Vieta like products involving Fibonacci and Lucas numbers.*

The beautiful infinite product formula of radicals

$$\frac{2}{\pi} = \sqrt{\frac{1}{2}}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}}}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}}}}\cdots$$

due to Vieta in 1592, is one of the oldest noniterative analytical expressions for π. It is the purpose of this note to prove the following two Vieta-like products

$$\frac{\sqrt{5}F_N}{2N\log\phi} = \sqrt{\frac{1}{2}+\frac{L_N}{4}}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{L_N}{4}}}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{L_N}{4}}}}\cdots$$

for N even, and

$$\frac{L_N}{2N\log\phi} = \sqrt{\frac{1}{2}+\frac{\sqrt{5}F_N}{4}}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{\sqrt{5}F_N}{4}}}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{1}{2}\sqrt{\frac{1}{2}+\frac{\sqrt{5}F_N}{4}}}}\cdots$$

for N odd. Here N is a positive integer, F_N and L_N are the Fibonacci and Lucas numbers, and $\phi = \frac{1+\sqrt{5}}{2}$ is the golden section. (Received September 12, 2007)