

$$\textcolor{blue}{\Phi} = \frac{1}{2}(\sqrt{5} + 1); \tag{[1]}$$

$$\textcolor{blue}{\phi} = \Phi - 1 = \frac{1}{\Phi} = \frac{1}{2}(\sqrt{5} - 1) \tag{[2]}$$

$$F(k) = \frac{1}{\sqrt{5}} * [\Phi^k - (-\phi)^k] \tag{[3]}$$

$$\pi = 4\sqrt{5} \sum_{n=0}^{\infty} \frac{(-1)^n F(2n+1)}{(2n+1)\Phi^{2(2n+1)}} \tag{[4]}$$

$$\pi = 4 \sum_{n=0}^{\infty} \frac{(-1)^n [\textcolor{violet}{\Phi}^{2n+1} - (-\phi)^{2n+1}]}{(2n+1)\textcolor{violet}{\Phi}^{2(2n+1)}} \tag{[5]}$$