

$$\sum_n \frac{1}{F_n} = \frac{\sqrt{5}}{4} \left( \frac{2 \Gamma_{\phi^{-4}}^{(1,0)}(1) - 4 \Gamma_{\phi^{-2}}^{(1,0)}(1) + \log(5)}{2 \log(\phi)} + \vartheta_2 \left( 0, \frac{1}{\phi^2} \right)^2 \right)$$

In[556]:= % /. Subscript[Gamma,  $\alpha$ \_] := (QGamma[#,  $\alpha$ ] &)

$$\text{Out[556]= } \sum_n \frac{1}{F_n} = \frac{1}{4} \sqrt{5} \left( \frac{-4 \psi_{\frac{1}{\phi^2}}^{(0)}(1) + 2 \psi_{\frac{1}{\phi^4}}^{(0)}(1) + \log(5)}{2 \log(\phi)} + \vartheta_2 \left( 0, \frac{1}{\phi^2} \right)^2 \right)$$

In[557]:= N[List @@ %, 49]

Out[557]= {3.359885666243177553172011302918927179688905133732, 3.359885666243177553172011302918927179688905133732}