

```

num[c_] := Numerator[c]; den[c_] := Denominator[c]
alpha[n_, c_] := alpha[n, c] = den[c] (Floor[n / den[c]] - Floor[(n - 1) / den[c]]) -
  num[c] (Floor[n / num[c]] - Floor[(n - 1) / num[c]])
Lm1[n_, c_] := (1 / den[c]) Sum[If[alpha[j, c] == 0, 0,
  alpha[j, c] (-Log[j / den[c]] - Lm1[den[c] n / j, c])], {j, den[c] + 1, den[c] n}]

ff[n_, c_] := N[-Lm1[n, c] + Sum[c^k Log[c], {k, 1, Log[c, 100]}]]
ff2[n_, c_] := N[Sum[c^k Log[c], {k, 1, Log[c, 100]}]]

N[ff[100, 5 / 4]]
94.0453

N[Lm1[100, 2]]
-6.70877

```