$$\overline{L}\left(\overline{\mathcal{F}}, \overline{\Phi}\right) = 4\beta^2 e^{-4\alpha(n+1)\overline{\Phi}/[(n-1)(n-3)]} \left(1 - \sqrt{1 + \frac{e^{16\alpha\overline{\Phi}/[(n-1)(n-3)]}\overline{\mathcal{F}}}{2\beta^2}}\right).$$