$$\frac{t_j^{(k)}}{a^k} + \mathcal{O}^*(\varepsilon_4) 18mu \text{ where} 18mu t_j^{(k)} := \left(\frac{\pi}{2^i}\right)^j \frac{d_j^{(k)}}{\pi^{2k}} F^{(3k-2j)}(p), 18mu \varepsilon_4 = \frac{\varepsilon_3}{3L}$$