1. Local truncation error of the Euler-Heun Method

Show that the local truncation error of the Euler Heun method

$$U^{n+1} = U^n + hf(U^n + hf(U^n, t), t + h)$$

is $\tau_n = \mathcal{O}(h^3)$.

Hint: Use Taylor expansion similar to local truncation errors for PDEs before.

Hint: Show that $y'' = ff_y + f_t$.