Exercises

E15.2 [1C0] Let $n, m \geq 1$ be integers, and set

$$I_{n,m} = \int_0^1 x^n (\log x)^m \, \mathbb{d}x \quad :$$

relate $I_{n,m}$ with $I_{n,m-1}$; use that relation to explicitly calculate

$$\int_0^1 x^n (\log x)^n \, \mathbb{d}x \, .$$

Solution 1. *[1C1]*