

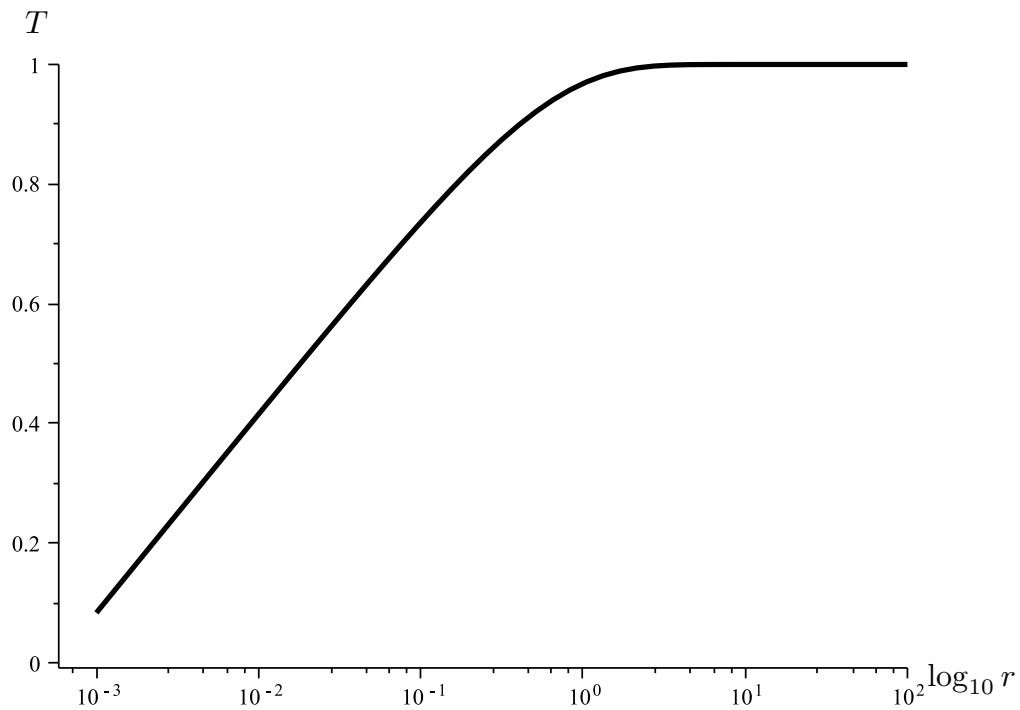
Singular Boundary Problem

Consider the following system:

$$\frac{1}{r} \frac{d}{dr} \left(r \frac{dT}{dr} \right) + T \frac{dT}{dr} = 0, \quad T(\epsilon) = 0, \quad T(\infty) = 1. \quad (1)$$

The uniform solution is found to be

$$T(r) = 1 - \frac{E_1(r)}{\log(1/\epsilon)}.$$



Asymptotic solution with $\epsilon = 10^{-3}$.