



**19.  $y(x^a) - by(x) = 0, \quad a, b > 0.$**

Solution:

$$y(x) = \Theta(\ln |\ln x|) |\ln x|^p, \quad p = \frac{\ln b}{\ln a},$$

where  $\Theta(z) = \Theta(z + \ln a)$  is an arbitrary periodic function with period  $|\ln a|$ .

For  $\Theta(z) \equiv \text{const}$ , there is a particular solution  $y(x) = C |\ln x|^p$ , where  $C$  is an arbitrary constant.

### Reference

**Polyanin, A. D. and Manzhirov, A. V.**, *Handbook of Integral Equations: Exact Solutions (Supplement. Some Functional Equations)* [in Russian], Faktorial, Moscow, 1998.