



**6.  $y(x+1) - f(x)y(x) = 0$ .**

Here,  $f(x) = f(x+1)$  is a prescribed periodic function with unit period

Solution:

$$y(x) = \Theta(x)[f(x)]^x,$$

where  $\Theta(x) = \Theta(x+1)$  is an arbitrary periodic function with unit period.

For  $\Theta(x) \equiv \text{const}$ , there is a particular solution  $y(x) = C[f(x)]^x$ , 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.