

Systems of Ordinary Differential Equations > Linear Systems of Two Equations

5.
$$x'_t = f(t)x + g(t)y$$
, $y'_t = ag(t)x + [f(t) + bg(t)]y$.

The transformation

$$x = \exp\left[\int f(t) dt\right] u, \quad y = \exp\left[\int f(t) dt\right] v, \quad \tau = \int g(t) dt$$

leads to a system of constant coefficient linear differential equations of the form 1.1:

$$u'_{\tau} = v, \quad v'_{\tau} = au + bv.$$

Copyright © 2004 Andrei D. Polyanin

http://eqworld.ipmnet.ru/en/solutions/sysode/sode0105.pdf