

Systems of Ordinary Differential Equations > Linear Systems of Two Equations

4. 
$$x'_t = f(t)x + g(t)y$$
,  $y'_t = -g(t)x + f(t)y$ .

Solution:

$$x = F(C_1 \cos G + C_2 \sin G), \quad y = F(-C_1 \sin G + C_2 \cos G),$$

where  $C_1$  and  $C_2$  are arbitrary constants, and

$$F = \exp\left[\int f(t) dt\right], \quad G = \int g(t) dt.$$

## Reference

Kamke, E., Differentialgleichungen: Lösungsmethoden und Lösungen, I, Gewöhnliche Differentialgleichungen, B. G. Teubner, Leipzig, 1977.

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http://eqworld.ipmnet.ru/en/solutions/sysode/sode0104.pdf