



Systems of Ordinary Differential Equations > Linear Systems of Two Equations

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

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.