

Systems of Ordinary Differential Equations > Nonlinear Systems of Two Equations

3.
$$x'_t = F(x, y), \quad y'_t = G(x, y).$$

Autonomous system of general form.

Let

$$y = y(x, C_1),$$

where C_1 is an arbitrary constant, is the general solution of the first-order equation

$$F(x,y)y_x' = G(x,y).$$

Then the general solution the original system of equations has the form

$$\int \frac{dx}{F(x,y(x,C_1))} = t + C_2.$$

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http://eqworld.ipmnet.ru/en/solutions/sysode/sode0303.pdf