

La Matematiko

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Separation of Variables

The technique of so-called "separation of variables" is based on the fact that an equation of the form

$$(f, d) d' = g$$

can be re-written in "classical" notation as

$$f(d) \frac{dd}{dx} = g(x),$$

which can be written as

$$f(d) dd = g(x) dx.$$

One can then integrate each side independently. However, one can also integrate each side of the original equation independently, using the Substitution Theorem for Integrals on the left hand side:

$$\int_a^b (f, d) d' = \int_{d, a}^{d, b} f$$
