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3.  $g(x)y'_x = f_1(x)y + f_0(x)$ .

**First-order linear differential equation.**

Solution:

$$y = Ce^F + e^F \int e^{-F} \frac{f_0(x)}{g(x)} dx, \quad \text{where} \quad F(x) = \int \frac{f_1(x)}{g(x)} dx,$$

where  $C$  is an arbitrary constant.

### References

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First-Order Linear Differential Equation

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